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Associations between binge and heavy drinking and health behaviors in a nationally representative sample

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ABSTRACT

Background: Binge and heavy drinking are noted in the literature for their relatively high prevalence and adverse health-related effects.
Design and participants: We used data from the 2006 Behavioral Risk Factor Surveillance Survey (BRFSS) to determine the associations between binge and heavy drinking and a wide range of health-related variables, including positive and negative health behaviors, preventive care practices, and quality of life indices in a nationally representative sample of 344,793 adults.
Results: Rates of binge and heavy drinking in the current sample were 15% and 5%, respectively. Binge and heavy drinking were more common among men, younger adults, and individuals with higher incomes and at least some college education. After controlling for relevant demographic variables, binge and heavy drinking were associated with a number of adverse health-related and preventive care behaviors (e.g., smoking, failing to receive a mammogram), as well as less life satisfaction and a greater number of poor mental health days than those who did not engage in these drinking behaviors. Interestingly, binge and heavy drinking were also associated with some positive health-related variables (e.g., recent physical activity, positive perceptions of one's own health).
Conclusions: The current study findings provide additional information regarding the relations between health-related attitudes and behaviors and binge and heavy drinking in the U.S. population. Implications of study findings are discussed.

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1. Introduction

Binge drinking and heavy drinking are noted in the literature with regard to their high prevalence and associations with a number of adverse health-related outcomes. Binge drinking is generally defined as the consumption of four or more drinks on one occasion for women and five or more drinks on one occasion for men (Courtney & Polich, 2009; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Heavy drinking is generally defined as a daily average of more than one drink per day for women and more than two drinks per day for men (USDA & DHHS, 2005). In recent large nationally representative studies, approximately 20% of adults reported binge drinking at least once in the previous year (SAMHSA, 2007, 2008; Schoenborn & Adams, 2010), and these figures are consistent with prevalence rates from 2000 to 2001 (SAMHSA, 2002). Rates of heavy drinking in the U. S. are also notable, stabilizing around 6.9% in 2007 (SAMHSA, 2008) after an increase from approximately 5.6% in 2000–2001 to 6.7% in 2002 (SAMHSA, 2002).

1.1. Correlates of binge and heavy drinking

A number of correlates of binge and heavy drinking have been identified. Binge and heavy drinkers are more likely to be White or Hispanic, male, single, younger, and have higher incomes than individuals who do not report these drinking behaviors (Dawson, Li, & Grant, 2008; Miller, Mahler, & Gold, 1991; Mojtabai, 2005; Naimi, Brewer, Mokdad, Denny, Serdula & Marks, 2003; NIAAA, 2010; Schoenborn & Adams, 2010; Serdula, Brewer, Gillespie, Denny, & Mokdad, 2004; Tsai, Floyd, Green, & Boyle, 2007). Binge and heavy drinking are also associated with negative health behaviors, including smoking (Dawson et al., 2008; Rosal, Ockene, Hurley, & Reiff, 2000) and decreased engagement in physical activity (Rosal et al., 2000; Smothers & Bertolucci, 2001); increased physical health problems,

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including hepatitis (Bradley et al., 2001), hypertension (Dawson et al., 2008; Green & Polen, 2001), gastrointestinal problems (Theobold, Johansson, Bygren, & Engfeldt, 2001), and heart problems (Chen et al., 2006; Dawson et al., 2008; USDA & DHHS, 2005); and mental health difficulties (Chen et al., 2006; Dawson et al., 2008; Green & Polen, 2001; Miller et al., 1991).

Taken together, research shows that binge and heavy drinking are associated with a number of negative physical and mental health outcomes, as well as some maladaptive health behaviors. While informative, questions remain regarding our understanding of the health outcomes related to these drinking behaviors, as the majority of extant studies assess only one form of risky drinking (e.g., binge drinking; Dawson et al., 2008) or health outcome (e.g., suicide; Miller et al., 1991). Additionally, while current research is fairly consistent, it is often based on highly restricted study samples [e.g., female veterans from a single Veterans Affairs Medical Center (Bradley et al., 2001); women over 50 from a single state (Fredman et al., 1999)], limiting the generalizability of these findings to the broader U.S. population. Finally, there are few studies assessing the relations between binge and heavy drinking and preventive care practices, and those that exist also primarily focus on circumscribed variables and study samples [e.g., members of a single health plan service (Green et al., 2010); Medicare recipients (Merrick et al., 2008)].

1.2. Aims of the current study

The purpose of the current study was to examine the relations between binge and heavy drinking and health-related variables in a large nationally representative sample. This study extends current research by examining the associations between binge and heavy drinking and a wide range of health-related variables, including both positive and negative health behaviors, engagement in preventive care practices, and quality of life indices that have not been previously examined. These data are particularly useful as they can generalize to the broader U.S. population, and thus, can be used to inform current research and practice.

2. Method

We analyzed Behavioral Risk Factor Surveillance Survey (BRFSS) data from 2006 (CDC, 2006). The BRFSS is a state-based, random-digit-dialing telephone survey of the United States adult population sponsored by the CDC, used to measure health conditions and related behaviors to track risk factors and inform related programs and interventions (CDC, 2008). In 2006, 355,710 interviews were completed and data were collected from all 20 states, DC, Puerto Rico, and the U.S. Virgin Islands. Trained interviewers administered the BRFSS using a computer-assisted telephone interviewing (CATI) system. Data were collected monthly by each state and territory. The median response rate for participating areas in 2006 was 51.4%. This estimate, developed by the Council of the American Survey of Research Organizations (CASRO), includes cooperation elements such as refusals, early terminations, unavailability of participants, as well as sampling efficiency elements such as no answers, busy signals, and language barriers. The median cooperation rate in 2006 was 74.5%.

The BRFSS employs a multistage cluster design based on random-digit-dialing methods to select a representative sample of the adult U.S. civilian, non-institutionalized population. In 2006, fifty-one sites used a disproportionate stratified sample (DSS) design and Puerto Rico and the U.S. Virgin Islands used a simple random sample design. The DSS design typically involves dividing telephone numbers into two groups or strata (high-density and low-density). The two strata are then sampled disproportionately to obtain a probability sample of all households with telephones. In most cases, each state constitutes a single stratum. The BRFSS survey design, sampling methods, and weights have been described elsewhere (Mokdad, Stroup, & Giles, 2003), and BRFSS data have yielded valid and reliable estimates when compared to other national U.S. household surveys (CDC, 2006; Mokdad, Stroup, & Giles, 2003; Nelson, Powell-Griner, Town & Kovar, 2003).

2.1. Drinking and individual difference variables

2.1.1. Socio-demographic characteristics

The BRFSS provides information on a wide range of socio-demographic and background characteristics. For the current study, we combined race/ethnicity to create four groups: non-Hispanic White (White), Non-Hispanic Blacks (Blacks), Hispanics, and non-Hispanic/Other. We created four age categories: 18–34, 35–49, 50–64 and 65+ years; four education categories: those who did not graduate high school, high school graduates, those who did not graduate college and college graduates; and four income categories: less than $25,000, $25,000–$49,999, $50,000–$74,999 and $75,000 or more. We defined marital status as married versus not married; employment status as employed versus unemployed; and insurance status as insured versus uninsured. Finally, respondents were asked (yes/no) if they considered a single person their healthcare provider.

2.1.2. Heavy and binge drinking

Respondents were asked if they drank alcohol in the last month, and if so, how many days per week or month they drank and the average number of drinks consumed per drinking day. Consistent with BRFSS guidelines, past month binge drinking was defined as five or more drinks in one sitting for men and four or more drinks in one sitting for women, and heavy drinking was defined as more than two drinks per day for men and one drink per day for women (CDC, 2008). These two categories of drinking behavior were not mutually exclusive.

2.1.3. Health behaviors

Respondents were asked about their smoking status (i.e., current, former, never) and classified as a current smoker or former smoker/never smoked. Those who reported any past-month physical activity or exercise aside from their regular job in the past month (yes/no) were categorized separately from those who did not report recent leisure time physical activity, and respondents who reported always wearing a seatbelt were categorized separately from those who did not always wear a seatbelt.

2.2. Preventive care

2.2.1. Female-specific behaviors

Women aged 18 or older were asked whether they ever received a pap test (test for cancer of the cervix), as well as how long it had been since their last test. Receipt of a pap test within the last three years, per recommended guidelines, was considered a positive response. Women aged 40 or older were asked similar questions regarding mammograms, with receipt of a mammogram within the past two years considered a positive response. Mammogram analyses were conducted separately for women over the age of 40 and women over the age of 50.

2.2.2. Male-specific behaviors

Men aged 40 or older were asked if they ever received a Prostrate-Specific Antigen (PSA) test (test for prostate cancer), as well as how long it had been since their last test. Receipt of a PSA test within the past two years was considered a positive response. Due to alternate conventions regarding PSA testing, we also examined receipt of a PSA selecting for men age 50 or older.

2.2.3. General behaviors

All respondents aged 50 or older were asked whether they ever used a home blood stool test, as well as how long it had been since