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# Alcohol Use In Inpatient Psychiatric Clinicians

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ALCOHOL USE IN INPATIENT PSYCHIATRIC CLINICIANS

Thesis  
Submitted to the Faculty  
Yale University School of Nursing

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science in Nursing

Lauren A. Fiola

May 21, 2012

This thesis is accepted in partial fulfillment of the requirements for the degree Master of Science in Nursing.

Joanne DeSanto Iennaco, PhD, PMHNP-BC, APRN

Date here May 16, 2012

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Lauren A. Fiola

May 16, 2012

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## **Abstract**

### ALCOHOL USE IN INPATIENT PSYCHIATRIC CLINICIANS

Employee alcohol use is an important public health problem that has not been adequately studied. This may be due to stigma, privacy, and ethical issues associated with uncovering problematic drinking behavior in the workplace. The present study sought to estimate the current prevalence of self-reported alcohol use in 59 inpatient psychiatric clinicians. Results indicated that 66.1% report current alcohol use, 30.5% report binge drinking episodes, 11.9% report harmful or hazardous alcohol use, and 10.2% report a history of an alcohol problem. In adjusted logistic regression models, non-white ethnicity suggested harmful or hazardous alcohol use (OR = 5.57, 95% CI [0.84, 36.96],  $p = 0.08$ ), while female gender trended towards being protective against harmful or hazardous alcohol use (OR = 0.16, 95% CI [0.03, 1.07],  $p = 0.06$ ). A current prevalence estimate for alcohol use in inpatient psychiatric clinicians is a step towards understanding the scope of the problem in this population. Increased understanding of the factors associated with harmful or hazardous alcohol use in this population may inform future occupational health promotion interventions.

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## **Introduction**

Employee alcohol use is an important public health problem that has not been adequately studied. This state of affairs may be due to stigma, privacy, and ethical issues associated with uncovering problematic drinking behavior in the workplace. In 1998, costs of alcohol abuse in the United States (U.S.) exceeded \$184.6 billion, a figure 25% higher than 1992 estimates (Aseltine, DeMarco, Wallenstein & Jacobs, 2009). Increased alcohol use in the workforce is associated with two to three times higher rates of absenteeism, higher rates of tardiness, 30% higher rates of staff turnover, 60% more injuries on the job, and increased conflict with co-workers (Billings, Cook, Hendrickson & Dove, 2008; McFarlin & Fals-Stewart, 2002; Mangione et al., 1999; Bush & Autry, 2002; Frone, 2003; Leggat & Smith, 2009). Of course, alcohol is only one of many abused substances. In the U.S. alone, employee substance abuse leads to over \$300 billion annually in productivity losses, and these costs appear to be increasing. Employees who abuse substances also have higher health care costs, claiming three times as many sickness benefits and filing five times as many workers' compensation claims than employees who do not abuse substances (Billings et al., 2008; Leggat & Smith, 2009). These employees also tend to have significantly lower job performance ratings (Trudeau, Deitz, & Cook, 2002; Billings et al., 2008).

### **National Prevalence of Alcohol Use**

The 2010 National Survey on Drug Use and Health (NSDUH) collected estimates of alcohol use from a nationwide sample of 68,487 Americans aged 12 years and older. Results suggested that over one-half (51.8%) of those surveyed reported current (past-month) alcohol use (Substance Abuse and Mental Health Services Administration [SAMHSA], 2011). The prevalence of current alcohol use decreased with increasing age, from 65.3% of 26 to 29 year

olds, to 51.6% of 60 to 64 year olds, to 38.2% of those aged 65 or older (SAMHSA, 2011, p. 28). Males were more likely to use alcohol than females (57.4% compared to 46.5%) (SAMHSA, 2011, p. 29). Among racial/ethnic groups, whites were most likely to use alcohol (56.7%), followed by individuals reporting two or more races (45.2%), blacks (42.8%), Hispanics (41.8%), Asians (38.4%), and American Indians or Alaskan Natives (36.6%) (SAMHSA, 2011, p. 30). Alcohol use rates significantly increased with higher levels of education, such that 69.1% of college graduates reported current alcohol use, compared to only 26.8% of adults with less than a high school education (SAMHSA, 2011, p. 31). Alcohol use also varied by geographical region of the United States, with 57.8% of participants reporting current alcohol use in the Northeast, compared to 54.7% in the Midwest, 51.0% in the West, and 47.5% in the South (SAMHSA, 2011, p. 32). Less than one-half (59 million, 23.1%) of those who reported current alcohol use also met criteria for binge drinking, which was defined in the NSDUH as consuming five or more drinks on one occasion at least one day in the past month (SAMHSA, 2011). Binge drinking rates were highest among Hispanics (25.1%), followed by American Indians or Alaskan Natives (24.7%), whites (24.0%), individuals reporting two or more races (21.5%), blacks (19.8%), and Asians (12.4%) (SAMHSA, 2011, p. 30).

### **National Prevalence of Alcohol Abuse and Dependence**

According to the DSM-IV-TR, alcohol abuse is defined as a maladaptive pattern of alcohol use leading to clinically significant impairment, as evidenced by recurrent interference with major obligations at home, work, or school; recurrent alcohol use in physically dangerous situations such as driving a car; recurrent alcohol-related legal problems; and/or continued alcohol use despite recurrent alcohol-related interpersonal problems (American Psychiatric Association [APA], 2000). Long-term alcohol abuse may lead to alcohol dependence, which is

characterized by tolerance; withdrawal symptoms; using larger amounts of alcohol over a longer period of time than intended; unsuccessful efforts to cut down or to control alcohol use; spending a significant amount of time obtaining, using, or recovering from alcohol use; significantly reducing social, occupational, or recreational activities due to alcohol use; and/or continued alcohol use despite a recurrent physical or psychological problem caused or exacerbated by alcohol (APA, 2000). According to the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), the rate of American adults meeting DSM-IV criteria for alcohol abuse rose from 5.6 million (3.0%) in 1991-1992 to 9.7 million (4.7%) in 2001-2002 (Grant et al., 2004). In contrast, the rate of American adults meeting criteria for alcohol dependence decreased from 8.2 million (4.4%) in 1991-1992 to 7.9 million (3.8%) in 2001-2002 (Grant et al., 2004). Results from the NESARC also suggested that alcohol abuse and dependence are significantly more prevalent in males and in younger individuals aged 18 to 44 years old. Nevertheless, despite a higher prevalence of alcohol abuse among males, the male to female ratio for alcohol abuse declined from 3.09 in 1991-1992 to 2.72 in 2001-2002, suggesting that rates by gender may be converging over time. Alcohol abuse was most prevalent in white and Native American participants (5.10% and 5.75%, respectively), followed by Hispanic (3.97%), black (3.29%), and Asian (2.13%) participants. Similarly, alcohol dependence was highly prevalent among Native American participants (6.35%), followed by Hispanic (3.95%), White (3.83%), Black (3.57%), and Asian (2.41%) participants (Grant et al., 2004).

### **National Prevalence of Illicit Drug and Tobacco Use**

The 2010 NSDUH also looked at rates of illicit drug and tobacco use in the U.S. population. Approximately 22.6 million (8.9%) Americans aged 12 years and older reported current (past-month) illicit drug use. Illicit drugs included marijuana/hashish, cocaine/crack,

heroin, hallucinogens, inhalants, and/or non-medical use of prescription medications (SAMHSA, 2011, p. 11). Approximately 69.6 million (27.4%) Americans reported current tobacco use, a rate that has declined from 30.4% in 2002 (SAMHSA, 2011, p. 40). Alcohol use was associated with illicit drug use (i.e., 31.8% of heavy drinkers also reported current illicit drug use), as well as tobacco use (i.e., 54.5% of heavy drinkers also reported past-month tobacco use) (SAMHSA, 2011, p. 33). An estimated 22.1 million (8.7%) participants met DSM-IV criteria for substance abuse or dependence, with 2.9 million reporting problems with both alcohol and illicit drugs, 4.2 million reporting problems with only illicit drugs, and 15.0 million reporting problems with only alcohol (SAMHSA, 2011, p. 69).

### **National Prevalence of Alcohol and Substance Use in Workers**

The 2010 NSDUH also looked at alcohol and substance use according to employment status and found that the prevalence of alcohol use was higher for full-time employed Americans (64.8%) than for unemployed Americans (56.1%). In contrast, the rate of binge drinking among unemployed Americans (32.8%) was higher than that of full-time employed Americans (29.7%) (SAMHSA, 2011, p. 31). However, since full-time workers constitute approximately two-thirds (114.7 million) of the U.S. population aged 18 to 64 years old, workers reflect the bulk of those abusing substances in America (Larson, Eyerman, Foster, & Gfroerer, 2007). From 2002 to 2004, an estimated 10.6 million full-time workers (9.2%) met criteria for past-year alcohol abuse or dependence (Larson et al., 2007). Approximately 1.83% of all workers report drinking within two hours of work, 7.06% report drinking during the workday, 1.68% report working under the influence of alcohol, and 9.23% report working with a hangover (Frone, 2006a). Workers with the highest rates of heavy alcohol use tend to be young Hispanic and white males earning less than \$19,000 annually with less than a high school education (Larson et al., 2007; Aseltine et al.,

2009; Frone, 2006a; Jensen, Wieclaw, Munch-Hansen, Thulstrup & Bonde, 2010; Zhang, Huang, & Birmingham, 2000).

The prevalence of illicit drug use in the U.S. workforce is an estimated 8.2% (Larson et al., 2007), with approximately 3.1% of workers using while in a workplace setting (Frone, 2006b). Similar to drinking behavior, illicit drug use among workers is also associated with younger age (i.e., 19.0% of 18 to 25 year-olds, 10.3% of 26 to 34 year-olds, 7% of 35 to 49 year-olds, and 2.6% of 50 to 64-year-olds), male gender (i.e., 9.7% of males versus 6.2% of females), lower education (11.2% of workers with less than a high school education versus 5.7% of college graduates), and lower income (13.2% of workers with a household income less than \$20,000 versus 6.0% of workers with a household income greater than or equal to \$75,000) (Larson et al., 2007).

Clearly, alcohol and illicit drug use are a problem in the U.S. workforce, and there is some evidence to suggest that workplace conditions may contribute to substance use in a worker population. In a detailed review, Frone (1999) proposed that alcohol use among workers may be related to a combination of factors, including low levels of supervision, low visibility, the availability of substances at work, a culture that promotes substance use, and work stress (i.e., high demands, dangerous work conditions, and interpersonal conflict). In a cross-sectional study of 2,329 randomly selected German workers, Roesler, Jacobi, and Rau (2006) found that workers with high levels of stress on the job were 1.55 times more likely to suffer from substance abuse or dependence (Roesler et al., 2006). Jensen et al. (2010) found that low psychosocial work satisfaction is significantly related to the development of a substance abuse disorder over time. U.S. industries with the highest rates of heavy alcohol use include construction (15.9%), arts, entertainment, and recreation (13.6%), and mining (13.3%), while industries with the lowest

prevalence of heavy alcohol use include health care (4.3%) and educational services (4.0%) (Larson et al., 2007). Industries with the highest prevalence of illicit drug use include accommodations and food services (16.9%) and construction (13.7%), while industries with the lowest prevalence of illicit drug use include public administration (4.1%), educational services (4.0%), and utilities (3.8%) (Larson et al., 2007).

### **Prevalence of Alcohol and Substance Use in Health Care Workers**

Although there is data to suggest that health care workers report among the lowest rates of heavy alcohol use (Larson et al., 2007), other studies have implicated problematic drug and alcohol use in specific subsets of the health care industry. In health care settings, employee substance use may contribute to decreased job performance, compromised patient safety, and the undermining of health care providers' roles as models for healthy behaviors (Collins, Gollnisch & Morsheimer, 1998; Taub, Morin, Goldrich, Ray & Benjamin, 2006). In a systematic review of occupational risk factors for EMTs, Donnelly and Siebert (2009) found rates of drug and alcohol use to be as high as 40%. This figure led the authors to speculate that a stressful work environment and exposure to traumatic events may be linked to increased substance use. Other studies have cited physicians and registered nurses as being at high risk for substance use due to increased access to prescription drugs, burnout, and job-related stress (Collins et al., 1999; Wilhelm, Kovess, Rios-Siedel & Finch, 2004). Among nurses, Storr, Trinkoff, and Anthony (1999) found that those with perceived high job strain were 50-60% more likely to use illicit drugs than those with perceived low job strain.

In 1994, the prevalence of past-year substance use (i.e., alcohol, illicit drugs, and tobacco combined) among all nurses was estimated to be 32% (Trinkoff & Storr, 1998). Others suggest that 69.6% of nurses report past-month alcohol use, a rate that is similar to that for other types of

workers and higher than that of the general U.S. population (Collins et al., 1999). Tobacco use (14.4%-21.7%), illicit drug use (3.5-3.6%), and binge-drinking (16.0%) rates for nurses were lower than the general population (Trinkoff & Storr, 1998; Collins et al., 1999). In a study of female nurses, Collins et al., (1999) mailed substance abuse questionnaires to 2,322 randomly selected participants and asked them to report whether or not they felt dependent on a substance. Results showed that 65% reported tobacco dependence, 60% reported caffeine dependence, and 5.7% reported alcohol dependence (Collins et al., 1999).

### **Prevalence of Alcohol and Substance Use in Psychiatric Clinicians**

Together with oncology and acute care specialists, psychiatric clinicians are cited as having among the highest rates of substance use (Collins et al., 1999; Trinkoff & Storr, 1998; Wilhelm et al., 2004). Among medical doctors, Wilhelm et al. (2004) found that self-reported substance abuse and dependence were highest among psychiatrists for benzodiazepines and emergency room physicians for other illicit drugs. In a 1994 survey of 4,438 randomly selected U.S. registered nurses, psychiatric nurses reported the second highest prevalence of past-year substance use at 40% (Trinkoff & Storr, 1998). Compared to other nursing specialties, psychiatric nurses report the highest prevalence of cigarette smoking (23.0%) and among the highest prevalence of illicit drug use (4.4%) (Trinkoff & Storr, 1998). Binge-drinking rates for psychiatric nurses were lower at 14.4 % (Trinkoff & Storr, 1998). Reasons for higher rates of substance use among psychiatric clinicians have not been rigorously studied, though researchers have speculated that substance use may be a coping mechanism for exposure to patient aggression (Bimenyimana, Poggenpoel, Myburgh, & Van Niekerk, 2009), reflective of a pharmacologically-oriented specialty culture (Trinkoff & Storr, 1998) and/or reported at higher

rates because psychiatric clinicians are more accepting of substance use problems (i.e., decreased stigma) (Trinkoff & Storr, 1998).

Current research on alcohol use in psychiatric clinicians is limited. The most recent prevalence estimates for substance use among psychiatric registered nurses are more than 10 years old and are limited to all female or nearly all female samples. To date, no research has been conducted using a varied sample of psychiatric clinicians, including nurses, patient care associates, and milieu counselors. Additionally, the majority of current data have been obtained via mail surveys and researchers have not attempted to collect substance use data in a workplace setting. Thus, the aims of the present study are twofold: 1) To estimate the prevalence of self-reported alcohol use in a sample of inpatient psychiatric clinicians; and 2) To explore factors predicting harmful or hazardous alcohol use in this population, including age, gender, ethnicity, hourly salary, education, tobacco use, and illicit drug use using logistic regression.

## **Methods**

### **Participants**

Participants were 86 direct clinical care providers at an acute inpatient psychiatric hospital in the Northeast. Participants were recruited via announcements and fliers in employee mailboxes. The sample included staff from three shifts (day, evening, and night) working on four units (including adult, adolescent, and geriatric units). All study protocols were approved by the Human Subjects Committee at Yale University. Informed consent was obtained from all participants prior to completing the measures.

### **Procedure and Measures**

The present study used a cross-sectional research design and involved secondary analysis of data from a larger longitudinal study on the effects of aggression exposure on inpatient

psychiatric workers (Iennaco et al., 2012). Fifty-nine participants (68.6% of the total consented sample) completed and returned surveys on demographic characteristics and substance use behavior. Participants were reimbursed for returning surveys in the main study.

**Alcohol use.** Two surveys were used to describe drinking behavior in this sample. As part of a Health Data Questionnaire, participants were instructed to recall alcohol use during the past month, including the number of alcoholic beverages consumed on an average day (“zero,” “one or two,” “three or four,” and “five or more”). Participants were also instructed to complete the Alcohol Use Disorder Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The AUDIT is a 10 item self-report questionnaire developed by the World Health Organization (WHO) as a screening tool for harmful or hazardous drinking behavior. Items are scored on a four-point Likert-type scale (0 = *never*, 4 = *daily or almost daily*) and are consistent with the ICD-10 definitions of harmful alcohol use and alcohol dependence (i.e., “How often during the last six months have you found that you were not able to stop drinking once you started?”; “How often during the last six months have you needed a first drink in the morning to get yourself going after a heavy drinking session?”). Total scores range from 0-40. Scores of eight or more suggest harmful or hazardous alcohol use, while scores greater than or equal to 20 are indicative of alcohol dependence and warrant further diagnostic evaluation. The AUDIT is an established measure with high internal consistency ( $\alpha = .83$ ), high test-retest reliability ( $r = .86$ ), and good criterion validity (Hays, Merz, & Nicholas, 1995; Babor et al., 2001). It is highly correlated with other well-established tools for assessing problematic alcohol use, such as the CAGE questionnaire ( $r = 0.66, p < .01$ ) and the Short Michigan Alcoholism Screening Test (SMAST;  $r = .62, p < .01$ ). When using a cutoff score of eight, the sensitivity and specificity of the AUDIT for hazardous alcohol consumption versus a structured clinical

interview based on ICD-10 criteria for alcohol dependence (WHO, 1992) is 97% and 78%, respectively (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Thus, although the scale very accurately identifies those with alcohol dependence, it over-identifies approximately 20% of those whose behaviors are not suggestive of dependence. The AUDIT has been validated across a wide variety of patient and community samples in six different countries (i.e., Australia, Bulgaria, Kenya, Mexico, Norway, and the United States) (Babor et al., 2001; Saunders et al., 1993).

Alcohol use variables were derived from AUDIT question one: “How often do you have a drink containing alcohol?” Harmful or hazardous alcohol use was defined as a total score of eight or more on the AUDIT. Binge drinking was derived from AUDIT question three: “How often do you have six or more drinks on one occasion?” History of an alcohol problem was assessed with the question: “Have you ever had a problem with alcohol?”

**Predictor variables.** Demographic data were collected using single-item measures for age, gender, ethnicity, education, relationship status, job title, and self-reported hourly salary. Information about tobacco use and illicit drug use was obtained from the Health Data Questionnaire, with past month being the selected time frame for current substance use. Ethnicity, relationship status, education (highest degree achieved), and job title were grouped to ensure greater than 10 participants in each category to maintain anonymity.

### **Data Analyses**

Data were analyzed using SPSS 17.0. Descriptive statistics, including means and standard deviations were reported for continuous variables. Frequencies and percentages were reported for categorical variables. Age and education were used as both categorical and continuous variables in the analyses. Age was grouped into three categories (i.e., 18—29 years, 30—55

years, and 56+ years) based on cutoff points derived from evaluating the distribution of the data. Education was grouped into 12 years or less (high school) and greater than 12 years (some college). Only descriptive information is reported for job title and relationship status.

The relationships between the predictor variables and harmful or hazardous alcohol use were assessed using bivariate and multivariate analyses. Bivariate associations between each covariate and harmful or hazardous alcohol use were assessed using odds ratios (ORs) with 95% confidence intervals (CIs) derived from the unadjusted logistic regression models. Stepwise logistic regression was performed to explore the impact of the predictor variables on harmful or hazardous alcohol use. To avoid possible collinearity issues in the planned logistic regression analyses, Pearson correlations among all predictor variables were reviewed. No variables correlated at  $r = .5$  or greater and thus no additional variables were excluded from the analyses (Alwin, 1988). Due to missing age and salary data, samples in adjusted models were reduced to  $N = 45$ . Each covariate was entered into the fully adjusted model based on unadjusted  $p$ -value from most significant to least significant. Once the full model was constructed, variables were removed based on  $p$ -value from least significant to most significant to obtain the final adjusted model (the most parsimonious model). Change in  $-2 \log$  likelihood and change in degrees of freedom were analyzed at each step of the model. Due to the small sample size, the significance level for variables to remain in the final adjusted model was set at  $p < 0.10$ .

## **Results**

### **Description of Participants and Drinking Behavior**

Participants were 59 inpatient psychiatric clinicians (see Table 1 for a summary of participant characteristics). Participants were predominantly single (59.3%), white (54.3%), female (64.4%), registered nurses (40.7%) between the ages of 30 and 55 (49.1%,  $M = 45.53$

years,  $SD = 14.04$  years). On average, participants were highly educated ( $M = 17.43$  years,  $SD = 11.05$  years), with the majority attending at least some college (88.1%). The mean hourly salary was \$26.64 ( $SD = \$11.96$ ). Only 10 participants (16.9%) reported current tobacco use and only two (3.4%) reported current illicit drug use.

Drinking behavior characteristics of the sample are summarized in Table 2. The majority of participants reported currently using alcohol (66.1%), with 11.9% reporting harmful or hazardous use, and 30.5% reporting an episode of binge drinking in the past six months. Among those consuming any alcohol, 22.0% reported use two to four times a month, 20.3% reported use monthly or less, 18.7% reported use two to three times a week, and 5.1% reported use four or more times a week. Six participants (10.2%) reported a history of an alcohol problem, and of these individuals, 50% currently abstain from alcohol use.

### **Bivariate Associations with Harmful or Hazardous Alcohol Use**

Associations between predictor variables and harmful or hazardous alcohol use are summarized in Table 3. No associations were significant at  $p < 0.05$ ; however, several were nearly significant at  $p < 0.10$ . Female clinicians were less likely to engage in harmful or hazardous alcohol use than males ( $OR = 0.19$ , 95% CI [0.03, 1.08],  $p = 0.06$ ). Clinicians reporting current tobacco use were more likely to engage in harmful or hazardous alcohol use than non-users ( $OR = 4.29$ , 95% CI [0.78, 23.43],  $p = 0.09$ ). Individuals attending at least some college were less likely to partake in harmful or hazardous alcohol use than those with a high school education ( $OR = 0.17$ , 95% CI [0.02, 1.28],  $p = 0.09$ ). No significant associations were found between harmful or hazardous alcohol use and age, ethnicity, hourly salary, and illicit drug use.

### **Multivariate Adjusted Models of Harmful or Hazardous Alcohol Use**

The results of the fully adjusted logistic regression model assessing the impact of gender, age, tobacco use, ethnicity, education, hourly salary, and illicit drug use on harmful or hazardous alcohol use are presented in Table 4. None of the predictor variables made a statistically significant contribution to the full model at  $p < 0.05$ ; however gender neared significance, with females being less likely to engage in harmful or hazardous alcohol use than males (OR = 0.15, 95% CI [0.02, 1.31],  $p = 0.09$ ). Although no other variables significantly predicted harmful or hazardous alcohol use in the full model, all odds ratios trended in the expected directions based on previous research. Given the stepwise modeling, it did appear that some variables might be significant in a more parsimonious model.

The results of the final adjusted logistic regression model assessing the impact of gender and ethnicity on harmful or hazardous alcohol use are shown in Table 5. Both predictor variables neared significance in the final model. Similar to the full model, female participants were less likely to engage in harmful or hazardous alcohol use than males (OR = 0.16, 95% CI [0.03, 1.07],  $p = 0.06$ ). Participants who reported an ethnic background other than white (i.e., black, Asian, Hispanic, and American Indian or Alaskan Native) were 5.57 times more likely to meet criteria for harmful or hazardous alcohol use than white participants (95% CI = 0.84, 36.96,  $p = 0.08$ ).

## **Discussion**

### **Prevalence of Self-Reported Alcohol Use**

The present study aimed to estimate the prevalence of self-reported alcohol use in a sample of inpatient psychiatric clinicians (see Table 6 for a comparison of prevalence estimates to previous literature). Participants in this study reported a similar rate of alcohol use (66.1%) to that cited in the literature for all workers (64.8%) and a higher proportion than the general U.S.

population (51.8%) (SAMHSA, 2011). Previous literature has not reported alcohol use rates for all psychiatric clinicians; however, a lower percentage (50.0%) of nurses in this study reported alcohol use than nurses in previous research (69.6%, Collins et al., 1999). In fact, in this study, nurses reported a lower prevalence of alcohol use than that for all other clinicians combined (77.1%). Only two (8.3%) nurses in this study reported tobacco use and none reported drug use, resulting in a combined substance use prevalence of 50.0%.

Previous literature is inconsistent regarding the definition of binge drinking. According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), men who consume five or more alcoholic drinks on one occasion and women who consume four or more alcoholic drinks on one occasion meet criteria for binge drinking (NIAAA, 2006). In the NSDUH, binge drinking was defined as consuming five or more alcoholic drinks on one occasion at least one day in the past month, regardless of gender (SAMHSA, 2011). Similarly, Trinkoff and Storr (1998) defined binge drinking as consuming five or more alcoholic drinks on the same occasion, regardless of gender. In this study, binge drinking was defined according to the AUDIT as consuming six or more alcoholic drinks on one occasion in the past six months, regardless of gender. Binge drinking rates for the full sample were 30.5% in the past six months; however, the past-month frequency of binge drinking (13.6%) was lower than that reported in the NSDUH for all workers (29.7%) and the general U.S. population (23.1%) (SAMHSA, 2011). Among nurses in this sample, 16.7% reported binge drinking in the past six months, compared to 14.4% of psychiatric nurses and 16.0% of all nurses in previous research (Trinkoff & Storr, 1998). Eleven men (18.6%) in the full sample reported binge drinking in the past six months, compared to seven women (11.9%). Nearly all female participants (94.7%) and 71.4% of male participants reported a less than monthly frequency of binge drinking.

The prevalence of harmful or hazardous alcohol use in the full sample (11.9%) was higher than alcohol abuse rates (4.7%) and alcohol dependence rates (3.8%) for the general U.S. population (Grant et al., 2004). No nurses in this sample met criteria for harmful or hazardous alcohol use, compared to 5.7% of nurses who reported alcohol dependence in a previous study (Collins et al., 1999). Although the AUDIT was developed to include items consistent with ICD-10 criteria for alcohol abuse and dependence, it was intended to be a screening tool rather than a diagnostic tool. Specifically, the AUDIT was created to detect individuals whose alcohol consumption presents a risk for physical and/or psychological harm before dependence or serious harm has occurred (i.e., before the individual would typically present for treatment) with the aim of providing at risk individuals with a brief intervention to decrease alcohol consumption to non-hazardous levels (Saunders et al., 1993). Thus, a total score of eight or more on the AUDIT likely captures a segment of the population that engages in problematic drinking behavior, but does not yet meet full criteria for alcohol abuse and dependence.

Although not the primary focus of this study, prevalence rates were also collected for illicit drug use and tobacco use. Clinicians in this sample reported a lower prevalence of illicit drug use (3.4%) than all workers (8.2%) and the general U.S. population (8.9%) (Larson et al., 2007; SAMHSA, 2011). Similarly, clinicians in this sample reported lower rates of tobacco use (16.9%) than the U.S. population (27.4%) (SAMHSA, 2011), and nurses in this sample reported lower rates of tobacco use (8.3%) than previous estimates for psychiatric nurses (23.0%) (Trinkoff & Storr, 1998). According to SAMHSA (2011), tobacco use rates in the U.S. have been gradually declining from 30.4% in 2002 to 27.4% in 2010 estimates. Although Trinkoff and Storr (1998) found that psychiatric nurses have the highest prevalence of cigarette smoking among all nursing specialties, these estimates are over 10 years old. The lower prevalence of

tobacco use in the present study may reflect a trend of declining tobacco use in America. Lower rates of tobacco and illicit drug use in the present study may also be due to sample variability.

### **Factors Predicting Harmful or Hazardous Alcohol Use**

A secondary aim of this study was to explore factors that relate to harmful or hazardous alcohol use in inpatient psychiatric clinicians. As stated previously, job title and relationship status were not included in the bivariate or multivariate analyses due to lack of variation. Specifically, no nurses and no individuals in relationships reported harmful or hazardous alcohol use. Nearly two-thirds of nurses in this sample were also in relationships (66.7%). This lack of variability is likely due to this study's small sample size, but perhaps there is something about being a psychiatric nurse or being in a relationship that is protective against harmful or hazardous alcohol use. Regardless, these two variables are clearly important and deserve further study in a larger sample of psychiatric clinicians.

In the bivariate analyses, gender was nearly significant, with female psychiatric clinicians being 85% less likely to report harmful or hazardous alcohol use than males (OR = 0.15, 95% CI [0.02, 1.31],  $p = 0.06$ ). This relationship is to be expected, as previous research looking at the general U.S. population and the U.S. workforce has consistently reported that males are significantly more likely to use and to abuse alcohol than females (Larson et al., 2007; Aseltine et al., 2009; Frone, 2006a; Jensen, Wieclaw, Munch-Hansen, Thulstrup & Bonde, 2010; Zhang, Huang, & Birmingham, 2000; SAMHSA, 2011; Grant et al., 2004). Previous studies looking at psychiatric clinicians have been limited to all female or nearly all female RN samples (Collins et al., 1999; Trinkoff & Storr, 1999). In this study, 75% of RNs, 100% of other clinicians, 63.6% of PCAs, and 38.9% of MCs were female.

Tobacco use was also nearly significant in the bivariate analyses (OR = 4.29, 95% CI = [0.78, 23.43],  $p = 0.09$ ), with individuals using tobacco being 4.29 times more likely to report harmful or hazardous alcohol use than those not using tobacco. College education was also nearly significant in the bivariate analyses (OR = 0.17, 95% CI = [0.71, 1.05],  $p = 0.09$ ), with individuals who attended at least some college being 29% less likely to report harmful or hazardous alcohol use than those with a high school education. These trends are to be expected, as heavy alcohol use has been associated with tobacco use in the general U.S. population (SAMHSA, 2011) and lower education in all workers (Larson et al., 2007; Aseltine et al., 2009; Frone, 2006a; Jensen, Wieclaw, Munch-Hansen, Thulstrup & Bonde, 2010; Zhang, Huang, & Birmingham, 2000). Other expected bivariate associations that did not approach significance in this particular study included illicit drug use, younger age, non-white ethnicity, and lower hourly salary.

The fully adjusted logistic regression model explored the impact of gender, age, tobacco use, ethnicity, college education, hourly salary, and illicit drug use on harmful or hazardous alcohol use. Gender was the only predictor variable that neared significance in the full model. This indicates that female gender may be protective against harmful or hazardous alcohol use in inpatient psychiatric clinicians (OR = 0.15, 95% CI [0.02, 1.31],  $p = 0.09$ ). Previous research has suggested that male gender, younger age, single marital status, and fewer children are all predictive of substance abuse or dependence in workers (Roesler et al., 2006). Though not statistically significant in the full model, younger age, non-white ethnicity, less than a college education, lower hourly salary, and illicit drug use trended in expected directions according to previous research. In a larger sample, these covariates may potentially be important risk factors for problematic drinking behavior.

The final adjusted logistic regression model was constructed using a backwards elimination procedure, in which  $p < 0.10$  was selected as the cutoff point for variables to remain in the model. Ultimately, gender (OR = 0.16, 95% CI [0.03, 1.07],  $p = 0.06$ ) and ethnicity (OR = 5.57, 95% CI [0.84, 36.96],  $p = 0.08$ ) remained in the model, with non-white male clinicians having higher risk of harmful or hazardous alcohol use in this sample. When combined with gender in the parsimonious model, non-white clinicians were 5.57 times more likely to partake in harmful or hazardous alcohol use. On the demographic questionnaire distributed to participants, options for ethnicity included: 1) Black or African-American; 2) American Indian or Alaskan Native; 3) Asian or Asian-American; 4) White; 5) Latino, Hispanic, or Spanish origin; and 6) Other. For the analyses, ethnicity was grouped into “white” and “non-white” to ensure greater than 10 participants in each category and to maintain anonymity. Unfortunately, by grouping ethnicity into only two categories, some information was lost. Although non-white participants are at greater risk for harmful and hazardous alcohol use, it is unclear what particular ethnic group(s) contribute to this potentially higher risk. Future research using a larger sample size of psychiatric clinicians may help to clarify ethnicity as a predictor variable for harmful or hazardous alcohol use.

### **Study Limitations**

The present study has several limitations. First, it uses a cross-sectional research design, which is common among prevalence studies. Although cross-sectional research can document an association between variables, the causal direction of the relationship remains unknown. Future research should use a longitudinal design to measure variables at baseline that may predict substance use at a later point in time (Frone, 1999). Second, response bias may be enhanced in this study due to the sensitive nature of the topic and the workplace setting. For

example, clinicians with greater alcohol use may not have participated in the study. However, previous studies on self-reports of alcohol use have shown adequate reliability and validity, particularly when data collection is structured to minimize bias (i.e., confidentiality is emphasized) (Del Boca & Darkes, 2003). In fact, self-reports of substance use have been found to be comparable to urinalysis results (Cook, Bernstein, Arrington, Andrews & Marshall, 1995). Finally, the small sample size and the specific type of workers sampled limits the ability to generalize this study's findings to the larger population. The small sample size also increases the likelihood of committing a type II error. Future research should aim to replicate this study with a larger sample of inpatient psychiatric clinicians.

### **Study Implications and Directions for Future Research**

This study offers important and novel information about the prevalence of alcohol use in inpatient psychiatric clinicians, as well as factors contributing to harmful and hazardous alcohol use in this particular population of workers. Overall, the prevalence of alcohol use in this sample of inpatient psychiatric clinicians was similar to other workers and higher than the general U.S. population. The prevalence of binge drinking in the full sample was lower than other workers and the general U.S. population. Nurses in this sample reported a similar rate of binge drinking as previous estimates. Although results suggested a higher prevalence of harmful or hazardous alcohol use in this sample than in the general U.S. population, nurses reported lower rates than previous estimates. Factors that trended towards predicting harmful or hazardous alcohol use in this population included male gender and non-white ethnicity.

Knowledge resulting from this study may benefit participants and perhaps society at large. A current prevalence estimate for substance use among psychiatric clinicians is a step towards understanding the scope of the problem in this population. Exploratory analysis of

variables associated with harmful or hazardous alcohol use in this population may help future researchers focus their analyses and design more rigorous studies on the topic. Increased understanding of the factors associated with harmful or hazardous alcohol use in this population may also have far-reaching occupational health and safety benefits. Future research should explore the relationships between substance use and work-related factors unique to this population, such as vicarious traumatization, burnout, and exposure to patient aggression. According to the NIAAA, the workplace is a prime setting for implementing alcohol and illicit drug abuse prevention strategies, since the majority of U.S. adults are full-time employees who spend a significant proportion of their time at work (Leggat & Smith, 2009). In the future, intervention strategies to decrease substance use in this population may be designed.

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Table 1

*Demographic Characteristics of the Sample*

	<i>n (%)</i>
Age (n = 55)	
18—29 years	12 (21.8)
30—55 years	27 (49.1)
56+ years	16 (29.1)
Gender	
Male	21 (35.6)
Female	38 (64.4)
Relationship Status	
Single	35 (59.3)
In a relationship	24 (40.7)
Ethnicity	
White	32 (54.3)
Black	16 (27.1)
Other	11 (18.6)
Education (College, n = 58)	
No	6 (10.2)
Yes	52 (88.1)
Job Title	
Registered Nurse (RN)	24 (40.7)
Milieu Counselor (MC)	18 (30.5)

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Patient Care Associate (PCA)	11 (18.6)
Other	6 (10.2)
Tobacco Use	
No	49 (83.1)
Yes	10 (16.9)
Drug Use	
No	57 (96.6)
Yes	2 (3.4)
	<b><i>M (SD)</i></b>
Age (n = 55)	44.53 (14.04)
Hourly Salary (n = 48)	\$26.64 (\$11.96)
Total Years of Education (n = 58)	17.43 (11.05)

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*Note.* N = 59, unless otherwise specified.

Table 2

*Drinking Behavior Characteristics of the Sample*

	<i>n (%)</i>
<b>Alcohol Use</b>	
Yes	39 (66.1)
No	20 (33.9)
<b>Frequency of Alcohol Use</b>	
Never	20 (33.9)
Monthly or less	12 (20.3)
Two to four times a month	13 (22.0)
Two to three times a week	11 (18.7)
Four or more times a week	3 (5.1)
<b>Harmful or Hazardous Alcohol Use</b>	
Yes	7 (11.9)
No	52 (88.1)
<b>Binge Drinking</b>	
Yes	18 (30.5)
No	41 (69.5)
<b>History of an Alcohol Problem</b>	
Yes	6 (10.2)
No	53 (89.8)

*Note.* N = 59.

Table 3

*Bivariate Associations between Predictor Variables and Harmful or Hazardous Alcohol Use*

	Total Sample N (%)	Harmful or Hazardous Alcohol Users n (%)	Not Harmful or Hazardous Alcohol Users n (%)	OR	95% CI for OR		Significance <i>p</i> ( $\chi^2$ , df)
Gender							
Female	38 (64.4)	2 (5.3)	36 (94.7)	0.19	0.03	1.08	0.06 (3.51, 1)
Male	21 (35.6)	5 (23.8)	16 (76.2)	1	Referent		
Age (N=55)							
56+	16 (29.1)	1 (6.3)	15 (93.7)	0.33	0.03	4.19	0.35 (0.86, 1)
30—55	27 (49.1)	4 (14.8)	23 (85.2)	0.91	0.14	5.81	0.59 (0.29, 1)
18—29	12 (21.8)	2 (16.7)	10 (83.3)	1	Referent		
Tobacco Use							
Yes	10 (16.9)	3 (30.0)	7 (70.0)	4.29	0.78	23.43	0.09 (2.82, 1)
No	49 (83.1)	4 (8.2)	45 (91.8)	1	Referent		

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Ethnicity							
Other	27 (45.7)	5 (18.5)	22 (81.5)	4.03	0.71	22.99	0.12 (2.46, 1)
White	32 (54.3)	2 (6.3)	30 (93.7)	1	Referent		
Education (College)							
Yes	52 (88.1)	5 (9.6)	47 (90.4)	0.17	0.02	1.28	0.09 (2.96, 1)
No	6 (10.2)	2 (33.3)	4 (66.7)	1	Referent		
Hourly Salary (N=48)	\$26.64 (\$11.96)	\$18.37 (\$2.15)	\$28.06 (\$12.39)	0.86	0.71	1.05	0.13 (2.27, 1)
<b><i>M (SD)</i></b>							
Drug Use							
No	57 (96.6)	6 (10.5)	51 (89.5)	0.13	0.01	2.37	0.17 (1.90, 1)
Yes	2 (3.4)	1 (50.0)	1 (50.0)	1	Referent		

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*Note.* OR = odds ratio; CI = confidence interval

Table 4

*Logistic Regression Model Predicting Likelihood of Harmful or Hazardous Drinking Behavior: Fully Adjusted Model Estimates*

	$\beta$	SE	Wald $\chi^2$	df	<i>p</i>	OR	95% CI for OR	
Gender								
Female	-0.97	0.56	2.97	1	0.09	0.15	0.02	1.31
Male						1	Referent	
Age								
30-55	-1.04	0.90	1.32	1	0.25	0.20	0.01	5.41
56+	0.46	1.13	0.17	1	0.68	0.90	0.02	49.26
18-29						1	Referent	
Tobacco Use								
Yes	0.49	0.62	0.63	1	0.43	2.68	0.24	30.42
No						1	Referent	
Ethnicity								
Other	1.05	0.82	1.63	1	0.20	8.13	0.33	203.65
White						1	Referent	
Education (College)								
Yes	-0.11	0.66	0.03	1	0.87	0.80	0.06	10.66
No						1	Referent	
Hourly Salary	-0.15	0.13	1.21	1	0.27	0.86	0.66	1.12

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Drug Use								
No	-0.29	0.90	0.10	1	0.75	0.56	0.02	19.39
Yes						1	Referent	

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*Note.* N = 45; OR = odds ratio; CI = confidence interval

Table 5

*Logistic Regression Model Predicting Likelihood of Harmful or Hazardous Drinking Behavior: Final Model Estimates*

	$\beta$	SE	Wald $\chi^2$	df	<i>p</i>	OR	95% CI for OR	
Gender								
Female	-0.91	0.48	3.56	1	0.06	0.16	0.03	1.07
Male						1	Referent	
Ethnicity								
Other	0.86	0.48	3.16	1	0.08	5.57	0.84	36.96
White						1	Referent	

*Note.* N = 45; OR = odds ratio; CI = confidence interval

Table 6

*Comparison of Prevalence Estimates to Previous Literature*

	U.S. Population (%)	All Workers (%)	All RNs (%)	Psychiatric RNs (%)		Psychiatric Clinicians (%)
				Current Study	Other Studies	Current Study
Alcohol Use	51.8 <sup>a</sup>	64.8 <sup>a</sup>	69.6 <sup>c</sup>	50.0	-	66.1
Tobacco Use	27.4 <sup>a</sup>	-	21.7 <sup>c</sup> 14.4 <sup>b</sup>	8.3	23.0 <sup>b</sup>	16.9
Drug Use	8.9 <sup>a</sup>	8.2 <sup>d</sup>	3.5 <sup>c</sup> 3.6 <sup>b</sup>	0.0	4.4 <sup>b</sup>	3.4
All Substance Use	-	-	32.0 <sup>b</sup>	50.0	40.0 <sup>b</sup>	67.8
Binge Drinking	23.1 <sup>a</sup>	29.7 <sup>a</sup>	16.0 <sup>b</sup>	16.7	14.4 <sup>b</sup>	30.5
Harmful or Hazardous Alcohol Use	-	-	-	0.0	-	11.9
Alcohol Abuse	4.7 <sup>c</sup>	9.2 <sup>d</sup>	-	-	-	-
Alcohol Dependence	3.8 <sup>c</sup>	-	5.7 <sup>c</sup>	-	-	-

*Note.* \*Alcohol abuse and dependence combined.

<sup>a</sup> = SAMHSA (2011)

<sup>b</sup> = Trinkoff & Storr (1998)

<sup>c</sup> = Collins et al. (1999)

<sup>d</sup> = Larson et al. (2007)

<sup>e</sup> = Grant et al. (2004)