



## Associations of lifetime abstinence and past and current alcohol use with late-life mental health: A propensity score analysis



C. Nathan Marti<sup>a</sup>, Namkee G. Choi<sup>a,\*</sup>, Diana M. DiNitto<sup>a</sup>, Bryan Y. Choi<sup>b</sup>

<sup>a</sup> University of Texas at Austin School of Social Work, 1925 San Jacinto Blvd, D3500, Austin, Texas, 78702, USA

<sup>b</sup> Department of Emergency Medicine, Warren Alpert Medical School, Brown University, Providence, Rhode Island, 02906, USA

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### ABSTRACT

**Background:** Compared to the extensive research on the effects of alcohol intake on physical health, little research has been done on the effects of alcohol use/nonuse patterns on mental disorders in late life. This study examined associations between mental disorders and alcohol use/nonuse patterns among individuals aged 65+ years.

**Methods:** Data came from the public use files of the 2008 to 2012 National Survey on Drug Use and Health. Alcohol use/nonuse groups were lifetime abstainers, ex-drinkers, bingers, and nonbingers. Mental health problems were lifetime major depressive episode (MDE) and anxiety disorder, past-year MDE and anxiety disorder, and past-year serious suicidal ideation. To minimize selection biases resulting from a complex array of covariates, we implemented a generalized boosted model to generate propensity score weights on covariates. Then we employed logistic regression models with mental health outcomes as the dependent variables.

**Results:** The four alcohol use/nonuse groups did not differ in past-year MDE. However, odds ratios show that, relative to non-binge drinking, lifetime abstinence decreased the odds of lifetime MDE by more than 60% (OR = 0.39, 95% CI = 0.23–0.68,  $p = .001$ ) and the odds of lifetime anxiety disorder by almost half (OR = 0.55, 95% CI = 0.38–0.79,  $p = .002$ ). Ex-drinkers were more likely than nonbingers to report past-year serious suicidal thoughts (OR = 2.29, 95% CI = 1.45–3.62,  $p < .001$ ).

**Conclusions:** While lifetime abstainers had significantly better lifetime mental health histories than nonbingers, ex-drinkers had worse past-year mental health status. Since lifetime abstainers and ex-drinkers have significantly different characteristics, researchers should distinguish between these groups.

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### 1. Introduction

A recent review of studies that examined health effects of alcohol consumption concludes that habitual light-to-moderate alcohol intake (up to 1 drink per day for women and 1 or 2 drinks per day for men) is associated with lower rates of death, coronary artery disease, congestive heart failure, diabetes mellitus, and stroke (O'Keefe et al., 2014). The review also reports that excessive alcohol intake, in a dose-dependent fashion, commonly causes reversible hypertension and atrial fibrillation, accounts for one third of all cases of nonischemic dilated cardiomyopathy, and markedly increases risks of both ischemic and hemorrhagic stroke. Intakes above 2.5 drinks per day in women and 4 drinks per day in men were also associated with progressively higher

death rates (O'Keefe et al., 2014). These J- or U-shaped relationships between alcohol consumption and health/mortality, where low-to-moderate alcohol intake is associated with better health than abstinence and excessive intake, whether acutely from binge drinking or long-term heavy drinking, are consistently associated with increasingly serious health problems and higher mortalities, are consistent across age groups (Hvidtfeldt et al., 2010; Jayasekara et al., 2014; Moore et al., 2006; O'Keefe et al., 2014; Patra et al., 2010). However, for coronary heart disease, the risk-to-benefit ratio of light-to-moderate drinking compared to lifelong abstinence is more favorable for those older than 50 years of age than for younger persons (Hvidtfeldt et al., 2010; O'Keefe et al., 2014).

Research also supports the benefits of low-to-moderate drinking for mental health, on the one hand, and significant associations between heavy alcohol use and alcohol use disorders (AUDs) and mental disorders, on the other, among middle-aged and older adults. A seven-year follow-up study of 5505 Spanish adults aged 55–80 years with no history of depression and alcohol-related

\* Corresponding author.

E-mail address: [nchoi@austin.utexas.edu](mailto:nchoi@austin.utexas.edu) (N.G. Choi).

problems at baseline found that compared to the non-drinking sample, both baseline and subsequent low-to-moderate drinking (5–15 g of alcohol [about 1 drink]/day) were significantly associated with a lower risk of incident depression in both genders and all age groups (Gea et al., 2013). On the other hand, heavy drinking (40 g of alcohol [about 3+ drinks]/day) was increasingly, though nonsignificantly, associated with higher rates of depression. A cross-sectional study of 24,863 U.S. primary care patients aged 65+ years also found that compared to low-to-moderate drinkers (1–7 drinks/week), both nondrinkers and heavy drinkers (>14 drinks/week) were more likely to report depression and anxiety symptoms (Kirchner et al., 2007). Studies of older adults based on the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) found that (1) having any lifetime mood or anxiety disorder was associated with increased odds of lifetime AUD, and any lifetime mood disorder was associated with increased odds of past 12-month AUD (Lin et al., 2014); (2) 20% of those who had major depression in their lifetime also had AUD in their lifetime (Chou and Cheung, 2013); and (3) high-risk drinking (including heavy episodic drinking) was significantly associated with major depression and low self-rated mental and physical health (Sacco et al., 2009). These and other studies show that AUD rates were three to four times higher among depressed community-dwelling older adults than among their nondepressed peers (Blow et al., 2007).

The co-occurrence of AUD and depression also heightens suicide risk, and the associations between AUD and suicide/suicide attempts are well-established in all age groups (Blow et al., 2004; Cavanagh et al., 2003; Wilcox et al., 2004). However, at-risk and problem alcohol use in geriatric suicide is likely underestimated because most older adults who experience alcohol-related problems do not meet AUD criteria (Blow et al., 2004). Because depression and anxiety and cardiovascular disease (CVD) are likely to share some common pathophysiological mechanisms, some mechanisms responsible for the J- or U-shaped relationships between alcohol intake and CVD (e.g., high-density lipoprotein cholesterol, c-reactive protein levels, insulin sensitivity and glucose metabolism) may also be involved in reduced risk for depression and/or anxiety among low-to-moderate drinkers and increased risk among heavy drinkers (Grenier et al., 2012; Liukkonen et al., 2011; Thurston et al., 2013).

More research is needed to examine the relationship between alcohol consumption patterns and mental disorders among older adults, in part because most studies have not differentiated lifelong abstainers from “sick quitters.” Sick quitters are those who stopped drinking heavily due to health problems; they were also more likely to have depressive symptoms than current drinkers, which may have exaggerated the risks associated with abstinence (Kerr and Ye, 2010; Liang and Chikritzhs, 2013). For example, in a study of 38,930 Norwegian adults (20+ years old, including 8952 in the 60+ group), an initially U-shaped relationship between drinking patterns and anxiety symptoms became nonsignificant and the association between alcohol intake and depression became less pronounced when sick quitters were excluded from abstainers (Skogen et al., 2009). Further, the British National Survey of Psychiatric Morbidity 2000 demonstrated a significant association between alcohol abstinence and common mental disorders and personality disorders only among those aged 16–70 years who were previous drinkers (Skogen et al., 2011).

Using multi-year U.S. epidemiologic data, the present study examined the prevalence of lifetime and past-year major depressive episode and anxiety disorder and past-year serious suicidal thoughts among the following groups of older adults: (1) lifetime abstainers; (2) ex-drinkers (those who drank previously but not in the past 12 months); (3) bingers (those who engaged in binge/heavy alcohol use in the past 30 days); and (4) nonbingers

(drinkers who engaged in nonbinge alcohol use or did not drink in the past 30 days). Although younger adults' reports of their drinking patterns have been found inconsistent, middle-aged and older adults' reports of abstinence over time tend to be highly consistent (Prescott et al., 1994; Rehm et al., 2008). Previous research found that genes, family environment, religiosity, and alcohol proscriptio significantly influence abstinence, and abstainers report their reasons for not drinking as no interest in alcohol, not liking the taste, fear of alcohol-related problems, religion, upbringing, negative effects on activities, and a waste of money (Bernards et al., 2009; Michalak et al., 2007). British birth cohort studies also found that individuals with a long-standing illness at an early age were significantly more likely to abstain throughout adulthood than those without such an illness and that persistent drinkers from a previous wave who developed such a limiting illness were more likely to have quit drinking at follow-ups than those who had not developed such an illness (Ng Fat et al., 2014, 2015). For example, those who developed an illness by age 42 were more than three times as likely to stop consuming alcohol by age 50 than those who did not develop an illness (Ng Fat et al., 2015). In the U.S., adult abstainers are significantly more likely than nonabstainers to be older, female, Asian or African American, foreign born, employed (although female abstainers had less education and income), and less likely to meet *DSM-IV* diagnostic criteria for major depressive disorder and other psychiatric disorders (Vaughn et al., 2011).

Based on previous studies, we hypothesized that compared to nonbingers, (H1) lifetime abstainers will have better mental health history; (H2) ex-drinkers will have worse mental health status because they are likely to include sick quitters; and (H3) bingers will have worse mental health status. Because a complex amalgam of sociodemographic factors, influence of religious beliefs in decision making, health conditions (in particular CVD, diabetes, and hepatic/gastrointestinal pathology), self-rated health, and use of other drugs and tobacco products are likely to affect alcohol use patterns and mental health in late life (Blazer and Wu, 2011; van den Berg et al., 2014; Sacco et al., 2009; Satre et al., 2011, Wu and Blazer, 2011), these variables were used to generate propensity score weights to minimize group differences. The models we tested, in which each mental health problem (depression, anxiety, serious suicidal thoughts) was an outcome variable and alcohol use/nonuse pattern was the exposure variable, were fit using the propensity score weights. In a rapidly aging society, this study adds to the knowledge base regarding the relationship between alcohol use/nonuse and common mental disorders in late-life.

## 2. Material and methods

### 2.1. Data and sample

Data came from the public use files of the 2008 to 2012 National Survey on Drug Use and Health (NSDUH). The annual NSDUH series is the largest population-based survey that measures substance use among the civilian, non-institutionalized, U.S. population aged 12 years or older (Inter-university Consortium for Political and Social Research, 2013). The data set also includes mental health status for respondents aged 18+ years and mental health and substance abuse treatment history. Respondents were interviewed in private at their residence using audio computer-assisted self-interview, computer-assisted personal interview, and/or computer-assisted self-interview to increase the validity of their reports of substance use. We combined five years of data to increase the study's power to detect low frequency events (e.g., serious suicidal thoughts). The total number of respondents who completed the survey in each of these years ranged from 55,268 to 58,397. The number of respondents in the 65+ age group totaled 11,191 during the five years. NSDUH's

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