Journal of Anxiety Disorders 31 (2015) 108–113

Contents lists available at ScienceDirect

Journal of Anxiety Disorders

Anxiety disorders and first alcohol use in the general population. Findings from a nationally representative sample

Louise Birrell*, Nicola C. Newton, Maree Teesson, Zoe Tonks, Tim Slade

NHMRC Centre of Research Excellence in Mental Health and Substance Use (CREMS), National Drug and Alcohol Research Centre (NDARC), University of New South Wales, Sydney 2052, NSW, Australia

ARTICLE INFO

Article history:
Received 9 December 2014
Received in revised form 19 February 2015
Accepted 24 February 2015
Available online 6 March 2015

Keywords:
Anxiety
Substance use
Epidemiology
Alcohol drinking
Age of onset
Adolescent
Age factors
Age of first drink

ABSTRACT

Objective: To examine how early onset anxiety disorders are related to age of first alcohol use in a general population sample.
Method: Discrete time survival analysis was used to model the odds of first alcohol use among those with, vs without, early onset anxiety disorders. Data came from the 2007 Australian National Survey of Mental Health and Wellbeing.
Results: After adjusting for the effects of family history of alcohol/drug use, sex, age cohort and education, people who experienced an early onset anxiety disorder had a 27% increased odds of first alcohol use in any given year, when compared to those with no anxiety disorder. This effect was particularly strong for transitions to first alcohol use that occurred after the age of 13 years.
Conclusions: Early onset anxiety disorders significantly predict first alcohol use in the general population and this relationship appears to be related to change over time. These results point to the need for developmentally appropriate and integrated prevention programs that target anxiety and alcohol use together.

1. Introduction

The most common mental health and substance use disorders in the general population are anxiety (Kessler et al., 2012a) and alcohol use disorders (Teesson et al., 2010). Epidemiological estimates in community samples approximate that between 20% (McEvoy, Grove, & Slade, 2011) and 31% (Kessler et al., 2007a) of the population in Western countries will suffer from an anxiety disorder during their lifetime, and between 19% (Kessler et al., 2005) and 22% (Teesson et al., 2010) will meet criteria for an alcohol use disorder. These two classes of disorders are also highly comorbid (McEvoy et al., 2011; Teesson et al., 2005). Individuals with an alcohol use disorder are 2.6 times more likely to have a comorbid anxiety disorder during their lifetime, than those without an alcohol use disorder (Teesson et al., 2010). People with comorbid mental health and substance use problems are known to be a particularly high risk group that are more difficult to treat, place a greater burden on service providers and have a more severe illness course (de Graaf, Bijl, ten Have, Beekman, & Vollebergh, 2004; Teesson & Proudfoot, 2003). To help understand this comorbidity it is useful to look at its origins and examine how anxiety disorders relate to age of first alcohol use.

Age of first alcohol use is an important outcome to examine in understanding the etiology and temporal sequencing of anxiety and alcohol use comorbidity. There is robust evidence demonstrating an association between an early age of first alcohol use and later alcohol-related problems and alcohol use disorders (Dawson, Goldstein, Chou, Ruan, & Grant, 2008; DeWit, Adlaf, Offord, & Ogborne, 2000; Fergusson, Horwood, & Lynskey, 1994; Grant & Dawson, 1997; Grant, Stinson, & Harford, 2001; Gruber, DiClements, Anderson, & Lodico, 1996; Hawkins et al., 1997; Liang & Chikritzhs, 2011). In a large US study, Grant et al. (2001) followed over 5000 young people aged between 14 and 21 years old for 12 years and found that the odds of alcohol dependence was decreased by 9% for each year that first alcohol use was delayed. Debate exists about whether evidence such as this demonstrates a causal relationship between age of first alcohol use and later alcohol use problems (Deutsch et al., 2013; Irons, Iacono, & McGue, 2014) or not (Geels et al., 2013; McGue, Iacono, Legrand, Malone, & Elkins, 2001; Prescott & Kendler, 1999), and as yet there is no definitive consensus about the mechanisms underlying these relationships.

A number of key variables are known to play a significant role in the relationship between age of first alcohol use and later alcohol problems, including psychopathology and anxiety disorders (Pang, Farrahi, Glazier, Sussman, & Leventhal, 2014;

* Corresponding author. Tel.: +61 2 9385 0333.
E-mail addresses: l.birrell@unsw.edu.au, louisebirrell@live.com.au (L. Birrell), n.newton@unsw.edu.au (N.C. Newton), m.teesson@unsw.edu.au (M. Teesson), zoe.tonks@unsw.edu.au (Z. Tonks), tims@unsw.edu.au (T. Slade).

http://dx.doi.org/10.1016/j.janxdis.2015.02.008
0887-6185/

Sartor, Lynskey, Heath, Jacob, & True, 2007). However, the majority of studies examining the role of anxiety disorders and alcohol use focus on regular alcohol use and alcohol use disorders as the key outcomes of interest (Behrendt et al., 2011). Particular attention has been given to the relationship between anxiety disorders and an increased speed of transition from first alcohol use to alcohol dependence (Behrendt et al., 2011; Lopez-Quintero et al., 2011). Fewer studies focus on first alcohol use as the primary outcome, and even fewer examine the temporal sequencing of anxiety disorders in relation to first alcohol use. This study will focus on first alcohol use as the key outcome. This is warranted, as evidence suggests that risk factors play different roles in the transition to regular alcohol use and alcohol use disorders, than in the transition to first alcohol use (Sartor et al., 2007). Furthermore, previous studies have not differentiated between the individual types of anxiety disorders, which may show differential relationships to alcohol use. The current study will address these gaps.

The temporal sequencing of first alcohol use and anxiety disorders centers around the developmental period of adolescence. In most Western countries, adolescence is a time when the majority of individuals consume their first alcoholic drink. It is also the time when a large number of the anxiety disorders have their onset (Falk, Yi, & Hilton, 2008), making this a particular developmental period of interest to examine the comorbidity of anxiety and alcohol use. More specifically, anxiety disorders that have an early onset have been linked to reports of greater anxiety severity, poor treatment response, more significant functional impairment and early depression (Dalrymple & Zimmerman, 2011; Rosellini, Rutter, Bourgeois, Emmert-Aronson, & Brown, 2013). Adolescence is also a distinct time of neuro-development, with key brain structures involved in emotion regulation and behavioral planning (such as the frontal lobes, temporal lobe, amygdala and hippocampus) undergoing dynamic change (Clark, Thatcher, & Tapert, 2008). This leaves adolescents particularly susceptible to risky behaviors, poor decision making and lack of emotion regulation. Furthermore, alcohol is known to inhibit behavioral inhibition and is likely to compound this lack of executive brain function. A recent review of brain imaging studies on the effect of alcohol consumption on the adolescent brain concluded that adolescents who frequently use alcohol show a different pattern of brain structure and function, compared to those who have not yet tried alcohol (Feldstein Ewing, Sakhardande, & Blakemore, 2014). Together this evidence highlights the need for further research around alcohol use at this critical life stage.

To understand why anxiety and alcohol use problems occur together it is important to explore their temporal sequencing over both; (a) the lifespan, and (b) across the different stages of alcohol use. This study focuses on first use of alcohol as a logical starting point in the etiology of anxiety and alcohol disorder comorbidity.

Specifically, the present study aimed to examine the temporal sequencing of early onset anxiety disorders in relation to age of first alcohol use in a general population sample. It was hypothesized that those who experienced an early onset anxiety disorder would be at increased odds of initiating drinking in any given year. This study will be the first to examine how early onset anxiety disorders relate to first use of alcohol use, using a nationally representative general population sample.

2. Methods and materials

2.1. Sample

Data came from the 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB). The NSMHWB was conducted in 2007 and is a nationally representative household survey including 8841 Australians aged 16–85 years old. Participants were randomly selected from a stratified, multistage area, probability sample and data were weighted according to the inverse probability of being selected. The survey achieved a final response rate of 60%, with a non-response follow-up study showing that mis-estimation at the aggregate level is predicted to be small (Slade, Johnston, Browne, Andrews, & Whiteford, 2009). Interviews were conducted by the Australian Bureau of Statistics (ABS), governed by Australian National Legislation that mandates strict provisions for the ethical conduct of research. Further details of the survey and its participants have been extensively reported elsewhere (Slade et al., 2009).

2.2. Measures

2.2.1. Assessment of anxiety disorders

A modified version of the World Mental Health Composite Diagnostic Interview (WMH—CIDI 3.0; Kessler, 2004) was used to determine if respondents met criteria for a DSM-IV anxiety disorder during their lifetime. Individual anxiety disorders assessed included; generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), agoraphobia, panic disorder, social phobia, and post-traumatic stress disorder (PTSD). Age of onset for each disorder was determined by the self-reported age that respondents first started to experience symptoms, or had the first episode of a disorder. When examining anxiety disorders as an overall class of disorders, age of onset was taken to be the earliest onset age from two, or more, individual disorders. Early onset of a disorder was defined as onset before the lower inter-quartile range for each disorder, thereby capturing cases that developed in the first 25% of the age of onset range for each disorder. The inter-quartile range and median age of onset for anxiety disorders in the Australian general population have been reported elsewhere (McEvoy et al., 2011).

2.2.2. Assessment of first use of alcohol

First use of alcohol was measured by the question, "how old were you the very first time you ever drank an alcoholic beverage—including either beer, wine or spirits?". Age of onset responses in cross-sectional surveys like the NSMHWB rely on retrospective recall and are subject to retrospective recall bias (Simon & VonKorff, 1995). To attenuate this problem the current survey utilized innovative strategies developed in the WMH CIDI, specifically aimed at increasing the accuracy of age of onset reports (Knäuper, Cannell, Schwarz, Bruce, & Kessler, 1999). For example, participants were asked if they could recall their *exact* age of onset (rather than asking "what was your age?"). If they could not remember their exact age they were asked to estimate their age using key developmental milestones to anchor their thinking (e.g. was it before you started school?). These strategies have been shown to both (a) increase the test-retest consistency and (b) substantially increase the plausibility of age of onset distributions, when compared to standard age of onset questions (Knäuper et al., 1999).

2.2.3. Covariates

Family history of alcohol or drug problems, sex, birth cohort and education are known or were hypothesized to be related to the onset of drinking (Dawson, 2000; Degenhardt, Lynskey, & Hally, 2000). These factors were included in all survival models as covariates. Family history of alcohol or drug problems was defined as having one or more close relative/s with a history of problems with alcohol or drug use. Birth cohort was based on year of birth in four categories; 1991–1978, 1977–1968, 1967–1958, and 1957 or before. Education was coded as the highest year of secondary school completed from the following six categories; Year 12 (at least 12 years of education), Year 11 (at least 11