



Substance use among older adults with bipolar disorder varies according to age at first treatment contact



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ABSTRACT

Background: The use of alcohol and drugs is common among people with bipolar disorder, but it is unclear if age of onset modifies this association.

Aims: To determine the cross-sectional and longitudinal association between age of onset of bipolar disorder (BD) and disorders associated with the use of alcohol or other substances in later life, as well as their impact on mortality.

Methods: Cohort study of a community-representative sample of 38,173 men aged 65–85 years at the start of the follow up period of 18 years. We used the Western Australian Data Linkage System to ascertain the presence of BD and substance use disorders according to the International Classification of Diseases (ICD). We also collected information on concurrent morbidities: diabetes, hypertension, ischaemic heart disease and stroke.

Results: 175 men had BD onset < age 60 years and 75 ≥ 60 years. Compared with older men without BD, the adjusted odds of alcohol use disorders were 3.87 (95%CI = 2.52, 5.93) for men with BD onset < 60 years and 2.38 (95%CI = 1.08, 5.25) for those with onset ≥ 60 years. The adjusted hazard ratio of incident disorders associated with the use of alcohol and other substances was 3.23 (95%CI = 1.87, 5.58) and 2.38 (95%CI = 1.38, 4.11) respectively for men with BD onset < 60 years. BD with onset ≥ 60 years was not associated with substance use disorders. The mortality hazard was not affected by the interaction between BD and the use of substances.

Conclusions: Substance use disorders (alcohol or others) are more prevalent among older adults with than without BD, but new cases are only more frequent among men with BD onset < 60 years of age. Grouping BD into early and late onset is clinically informative and may affect approach to assessment and management.

1. Introduction

The use of substances, such as alcohol, is common among people living with bipolar disorder (BD). Data from the Epidemiologic Catchment Area (ECA) study showed that 43.6% and 33.6% of adults with BD had experience a comorbid alcohol or drug use disorder respectively during their lifetime, a prevalence estimate that is 5 to 8 times greater than for people without a mental disorder (Regier et al., 1990). Subsequent studies have confirmed the association between the

use of substances and BD, (Hunt et al., 2016) which is concerning because this association increases health morbidity and mortality (Whiteford et al., 2013), including death by suicide (Cardoso et al., 2008; Dalton et al., 2003).

The relationship between BD and the use of substances is complex and not entirely clear. It is possible that the psychological and behavioural features that characterise BD lead to an increase in the use of substances (Swendsen et al., 2010), or that people with BD use substances as an attempt to manage affective symptoms (Meyer et al.,

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2012). If that is the case, it is possible that older people with BD may present a different pattern of use of substances, as coping and defence mechanisms change with age. Existing evidence suggests that younger adults are more prone to using outward and undifferentiated strategies, while older adults show greater impulse control and a tendency to positively appraise situations associated with conflict (Diehl et al., 1996). Preliminary cross-sectional data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) showed that the odds of alcohol use disorders during the preceding 12 months were nearly twice as low among BD participants older than, compared with younger than, 65 years of age, although a cohort effect on the results could not be discarded (Goldstein et al., 2006). This example of the apparent contrast between the clinical presentation of young and older adults with BD has led to the suggestion that there may be merit in grouping people with BD according to the age at first treatment contact of symptoms (Almeida et al., 2016; Sajatovic et al., 2015). The Older-Age Task Force of the International Society for Bipolar Disorders reported that there was consensus that 60 years is an appropriate age cut-point to define late onset BD (Sajatovic et al., 2015), which may be relevant when considering the use of alcohol and other substances.

In order to minimise the potential cohort effect associated with the comparison of different age groups at one point in time, it is important to investigate the association between the use of alcohol and other substances and BD in a community-representative sample of older adults that includes people with early and late onset of illness. In this instance, we would anticipate that lifetime substance use disorders would be more prevalent among older adults whose BD started early rather than later in life. In addition, if we consider that the use of substances is primarily driven by the age of onset rather than BD itself, then the incidence of substance use disorders in a sample of older people should be independent of the age of onset of symptoms (i.e., older adults with BD would be expected to use similar adaptive strategies to cope with symptoms). Clarifying these associations is more than an academic exercise: substance use disorders complicate the course of BD (Hjorthoj et al., 2015) and, given the rapid ageing of the population, it is important to clarify if the increasing number of older adults with BD require an approach to treatment that addresses both conditions.

This study aimed to: (1) examine the cross-sectional association between the prevalence of disorders associated with the use of alcohol or other substances with the age at first treatment contact of BD; (2) determine the longitudinal association between age at first treatment contact of BD and incident disorders associated with the use of alcohol or other substances; (3) investigate the mortality hazard associated with age at first treatment contact of BD and how this might be modified by the presence of alcohol or other substance use disorder.

2. Methods

2.1. Study design and setting

This report consists of a cross-sectional and a cohort study of community-dwelling older men living in the Perth metropolitan region of Western Australia.

2.2. Participants

We used the Australian Electoral Roll (voting is compulsory for all Australian citizens aged 18 years or over) to identify all Australian men aged 65–85 living in the Perth metropolitan region during 1996–1998. We identified 49,801 potentially men. Of these, 1839 had died by the time the study started, 9482 were living outside the study region and 307 were younger than 65 years (these men were invited in error). Hence, the study sample consisted of 38,173 older men. This cohort was recruited to investigate the effect of screening for aortic aneurysms on mortality. Only men were recruited because aortic aneurysm is much

more frequent in men than women. These participants were then re-identified before the retrieval of clinical information (please see details below). The Ethics Committees of the University of Western Australia and of the Department of Health of Western Australia approved the study protocol and procedures.

2.3. Study measures

We used the Western Australian Data Linkage System (WADLS) to obtain all available clinical information about participants. WADLS links health service data (including dates of contact) from inpatient and outpatient mental health services, hospital morbidity data, community aged care services, as well as cancer and death registries (Holman et al., 2008). The system uses the International Classification of Diseases (ICD) system for the coding of clinical diagnoses and procedures: ICD-8 from 1st January 1966 to 31st December 1969, ICD-9 from 1st January 1970 to 30th June 1999, and ICD-10 from the 1st July 1999. WADLS allows for the logging of multiple diagnoses at each contact.

We used the following ICD codes to establish the presence of BD: 296.1 and 296.3 (ICD-8), 296.0, 296.1, 296.4, 296.5, 296.6, 296.7, 296.80 and 296.81 (ICD-9), and F30 or F31 (ICD-10). We considered that the date of the first ever episode of bipolar disorder was the same as the date of the first ever contact with the health services with one of these diagnoses (outpatient or inpatient). If a depressive episode had been recorded before an episode of mania or mixed state, then the date of the depressive episode was considered the date of onset of BD. The ICD codes that identified depressive episodes were: 296.0 and 300.4 (ICD-8), 296.2, 296.3, 311 and 300.4 (ICD-9), and F32, F33, F34.1 and F38.10 (ICD-10). The earliest mental health morbidity records available were dated 1st January 1966, so that the minimum age of BD onset recordable would have been 35 years (i.e., 30 years before the start of the study). We used a hierarchical approach to diagnosis, so that participants who received a diagnosis of schizophrenia or delusional disorder at any point in time (ICD codes 295, 297, F20, F22, F23, F25, F28 and F29) were considered not to have BD. We defined late onset BD as a disorder with onset at or after the age of 60 years (Sajatovic et al., 2015).

Alcohol and other substance use disorders represented the main outcomes of interest of the study. The ICD codes that identified alcohol use disorders were: 291 and 303 (ICD-8), 291, 303, 305.0 (ICD-9) and F10 (ICD-10). The codes for other substance use disorders were 304 (ICD-8), 292, 304, 305 (excluding 305.0) (ICD-9), and F11 to F19 (ICD-10). These codes include disorders (dependence, withdrawal or intoxication) due to the use of opioids, cannabinoids, sedatives or hypnotics, cocaine, stimulants (including caffeine), hallucinogen, tobacco, volatile solvents and other psychoactive substances.

Other study measures included diabetes (ICD-8 and 9 codes 249 and 250, and ICD-10 codes E08 to E13), hypertension (ICD-8 and 9 codes 410 to 413 and ICD-10 codes I10 and I12), ischaemic heart disease (ICD-8 and 9 codes 410 to 414, and ICD-10 codes I20 to I25) and stroke (ICD-8 and 9 codes 430 to 434, 436 to 438, and ICD-10 codes I60 to I69). We calculated the age of participants in years by subtracting the date of contact from the date of their birth and then dividing the result by 365.25. We also used WADLS to ascertain the date of death of participants.

2.4. Statistical analyses

We used the statistical software Stata 15.1 to manage and analyse the data (StataCorp LLC, Revision 11 January 2018). Descriptive statistics summarised categorical variables as count and proportions (%), and continuous variables as mean, range, and standard deviation of the mean (SD). We used oneway analysis of variance to compare the ages of participants according to the age at first treatment contact of bipolar disorder. We then used multinomial logistic regression to investigate the association between BD and concurrent morbidities and adjusted all

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