



Review article

Comorbidity of bipolar and substance use disorders in national surveys of general populations, 1990–2015: Systematic review and meta-analysis



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ABSTRACT

Background: Substance use disorders (SUDs) are common in people with a bipolar disorder (BD). This systematic review and meta-analysis aimed to estimate the prevalence rates of SUDs in persons with BD based on national or international surveys of household populations.

Methods: Studies published from 1990 to Dec 31, 2015 were identified from MEDLINE, EMBASE, psychINFO, and CINAHL databases and reference lists. We calculated prevalence rates and conducted meta-analysis with random-effects model.

Results: We identified 9 unique surveys of which two surveys were repeated 10 years later using independent samples. The total sample size was 218,397 subjects. The mean prevalence for any illicit drug use disorder was 17%, for alcohol use disorder (AUD) it was 24% and SUD it was 33%. The strongest associations were found between BD and illicit drug use (pooled odds ratio (OR) 4.96, 95% CI 3.98–6.17) followed closely by BD and AUD (OR 4.09, 95% CI 3.37–4.96). The association was higher for BD respondents using illicit drugs compared to bipolar II respondents (ORs 7.48 vs. 3.30).

Limitations: Some of the meta-analysis grouped illicit substances together without taking into consideration types of substance use which may differ widely between countries and over time. All included studies were cross-sectional so onset and causality can not be determined.

Conclusions: The meta-analysis revealed that people with an alcohol use disorder were 4.1 times of greater risk of having a BD compared to those without an AUD. The risks were even higher for illicit drug users where they were 5.0 times of greater risk of having BD compared to non-users. These data confirm strong associations between co-occurring SUDs and BD, indicating a need for more informative studies to help develop better interventions in treating persons with BD and comorbid SUDs.

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Contents

1. Introduction	322
2. Methods	322
2.1. Data sources and search strategy	322
2.2. Selection criteria	323
2.3. Data abstraction	323

Abbreviations: 12M, 12 month; AUD, alcohol use disorder; BD-I, bipolar I disorder; BD-II, bipolar II disorder; BD, bipolar disorder; CI, confidence interval; CIDI, Composite International Diagnostic Interview; CUD, cannabis use disorder; DUD, drug use disorder; LT, lifetime; MeSH, Medical Subject Heading; N, subject number; OR, odds ratio; PTSD, Post-Traumatic Stress Disorder; SCAN, Schedule for Clinical Assessment in Neuropsychiatry; SCID, Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders; SD, standard deviation; SUD, substance use disorder

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2.4.	Risk of bias assessment	323
2.5.	Meta-Analysis	323
3.	Results	324
3.1.	Search findings	324
3.2.	Study characteristics	324
3.3.	Prevalence rates	324
3.4.	Meta-analysis	324
4.	Discussion	324
4.1.	Bipolar disorders comorbid with alcohol use disorders	326
4.2.	Bipolar disorders and illicit drug use	326
4.3.	Understanding and identifying people with substance use and a bipolar disorder	326
4.4.	Strengths and limitations	327
5.	Conclusions	328
	Authors disclosures	328
	Role of funding source	328
	Contributors	328
	Conflict of interest	328
	References	329

1. Introduction

People with a bipolar disorder (BD) have high, if not one of the highest, rates of substance use disorders (SUDs) of all the mental health disorders (Kessler, 2004; Levin and Hennessy, 2004; Regier et al., 1990). Current reasoning to explain the high rates of comorbidity in BD (as well as other mental health disorders) are that one mental disorder may directly influence another, such as heavy alcohol use may produce depression in those who are alcohol dependent (Cerdeira et al., 2008; Hall et al., 2009). Comorbidity may also arise indirectly for instance when substances are used for self-medication or for relieving mental distress associated with a psychiatric disorder – leading in some cases to dependence (Goldstein and Bukstein, 2010). Other possibilities include developmental, socioeconomic factors and genetic factors resulting from poverty, trauma or inherited traits within the family (Cerdeira et al., 2008; Farren et al., 2012; Mueser et al., 1998; Raimo and Schuckit, 1998). The high comorbidity rates may also be due to cultural or social reasons such as increased access and opportunity to use illicit drugs in the community (Liang et al., 2011). Recent research indicates that cannabis use is highly prevalent in BD and may trigger or induce manic symptoms resulting in earlier age of onset of bipolar illness (Bally et al., 2014; Gibbs et al., 2015; Le-weke and Koethe, 2008). Identification of those at risk of developing a SUD at an early age is important because the onset of BD often precedes the development of a SUD, thus, there is a narrow window of opportunity for prevention (Goldstein and Bukstein, 2010).

Comorbid BD and SUDs are usually associated with high levels of health service utilisation and destabilising the course of bipolar illness results in poor treatment outcomes (Kessler et al., 1994; Kessler, 2004; Merikangas and Gelernter, 1990; Rakofsky and Dunlop, 2013; Salloum and Thase, 2000). Yet despite the high rates of comorbidity between substance use and mood disorders, the problem remains poorly understood (Strakowski and DelBello, 2000), causality is unclear and comorbidity is often misdiagnosed among clinicians practising in either field (Brown et al., 2001; Cuffel, 1996; Tickell, 1999). A better understanding of comorbidity is needed to identify the correlational and/or potential causal relationships among symptoms and treatment in comorbid patients. Such knowledge will also make an important contribution to treatment and prevention strategies for mood disorders.

In epidemiologic surveys, comorbid prevalence rates can be expressed in two ways: the prevalence of SUDs among respondents with a mental health disorder or the prevalence of

psychiatric cases among respondents with a SUD. The prevalence rates between the two populations can vary considerably due to their frequency of occurrence. Take for instance the prevalence of BD and illicit drug dependence reported by Grant et al. (2004). The prevalence of any SUD in respondents with mania was approximately 30% compared to the prevalence of mania (~5%) in respondents with a SUD (Grant et al., 2004).

The aim of this systematic review is to report and combine the findings of large national or international surveys based on general populations reporting prevalence rates of SUDs comorbid with bipolar disorders from studies conducted between 1990 and 2015. We chose 1990 as a starting point to include the influential Epidemiologic Catchment Area (ECA) study and subsequent surveys using similar large-scale census techniques and face-to-face interviews to report prevalence rates using American Psychiatric Association- Diagnostic and Statistical Manual (DSM) or World Health Organisation- International Classification (WHO-ICD) diagnostic instruments from diverse geographic sites. Prevalence of having BD in respondents with an SUD, or prevalence of SUDs in respondents with BD were collated for lifetime and/or 12 month (12 M) abuse or dependence of alcohol or illicit drugs.

The odds (or odds ratio, OR) of having an alcohol or illicit drug use disorder in respondents with BD was used in the meta-analysis because it is not affected by differences in calculating prevalence rates of SUDs within populations with mental health disorders or vice versa. The current review excludes bipolar studies of clinical or treatment-seeking populations and these are the subject of a companion paper (Hunt et al., in press).

2. Methods

Methods were based on the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines (Liberati et al., 2009; Moher et al., 2009) and guidelines for Meta-Analysis for Observational Studies in Epidemiology (MOOSE) (Stroup et al., 2000).

2.1. Data sources and search strategy

An initial search of the bibliographic databases MEDLINE, PsychINFO, EMBASE and CINAHL was conducted in September 2014 and identified 27 unique community-based epidemiological surveys reporting comorbid substance use disorders in subjects with anxiety or a mood disorder between 1990 and 2014 (Lai et al.,

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