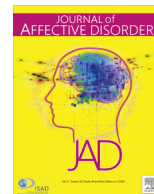




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## Research paper

## Monitoring of alcohol consumption in primary care among adults with bipolar disorder: A cross-sectional and retrospective cohort study

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## ARTICLE INFO

## Article history:

Received 27 May 2015

Received in revised form

15 February 2016

Accepted 7 March 2016

Available online 16 March 2016

## Keywords:

Bipolar disorder

Alcohol

Screening

Primary care

QOF

## ABSTRACT

**Background:** Screening for alcohol use disorders is an important priority in the healthcare of people with bipolar disorder, incentivised in UK primary care since 2011, through the Quality and Outcomes Framework (QOF). The extent of alcohol monitoring in primary care, and impact of QOF, is unknown. The aim was to examine recording of alcohol consumption in primary care.

**Methods:** Poisson regression of biennial alcohol recording rates between 2000 and 2013 among 14,051 adults with bipolar disorder and 90,023 adults without severe mental illness (SMI), from 484 general practices contributing to The Health Improvement Network UK-wide primary care database.

**Results:** Alcohol recording rates among people with bipolar disorder increased from 88.6 records per 1000 person-years (95% confidence interval 81.2–96.6) in 2000/2002 to 837.4 records per 1000 person-years (817.4–858.0) in 2011/2013; a more than nine-fold increase, mainly occurring after the introduction of the QOF incentive in 2011. In 2000/2002 alcohol recording levels among people with bipolar disorder were not statistically significantly different from those without SMI (adjusted rate ratio 0.96, 0.88–1.05). By 2011/2013, people with bipolar disorder were over four times as likely to have an alcohol record: adjusted rate ratio 4.45 (4.15–4.77).

**Limitations:** The routinely collected data may be incomplete. Alcohol data entered as free-text was not captured.

**Conclusions:** The marked rise in alcohol consumption recording highlights what can be achieved. It is most likely attributable to QOF, suggesting that QOF, or similar schemes, can be powerful tools in promoting aspects of healthcare.

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## 1. Introduction

Individuals with bipolar disorder have a lifetime risk of more than one in three of developing an alcohol use disorder (AUD) (Di Florio et al., 2014). Among people with bipolar disorder, comorbid AUD is associated with poorer prognosis including increased suicide risk (Cardoso et al., 2008; Carra et al., 2014), increased severity and frequency of manic and depressive episodes (Cardoso et al., 2008; Salloom et al., 2001, 2002), and poorer adherence and response to treatments (Leclerc et al., 2013). Screening for, and management of, AUDs is therefore an important priority in the healthcare of people with bipolar disorder. In April 2011, financial incentives were introduced in the UK primary care setting to

encourage general practitioners (GPs) to screen for alcohol consumption in people with severe mental illness (SMI), including bipolar disorder, within the Quality and Outcomes Framework (QOF) scheme (British Medical Association, 2014). QOF, introduced in April 2004, is the principal Payment for Performance scheme in the UK, designed to incentivise good practice in primary care by providing financial reward for achieving targets in monitoring and care of patients for different medical conditions.

There are no national studies examining alcohol screening in primary care among people with bipolar disorder and the impact of the national QOF on alcohol screening rates is unknown. The aims of this study were therefore to i) examine demographic patterns in alcohol consumption recording since the introduction of the QOF incentive for alcohol screening in SMI in April 2011 in a large, national sample of people with bipolar disorder in primary care, and ii) to compare alcohol recording levels in this sample with the levels of recording in people without SMI over time.

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## 2. Methods

### 2.1. Study design

Cross-sectional and retrospective cohort study.

### 2.2. Data source

Data came from The Health Improvement Network (THIN) primary care database (Blak et al., 2011) which comprises longitudinal electronic patient records retrieved from over 500 general practices across the UK (approximately 6% of the UK population). Diagnoses, symptoms and other relevant health information are principally entered into the THIN database in coded form, using the Read Code clinical classification system, described in Supplemental Table s1 (Chisholm, 1990). THIN includes the Townsend deprivation index, which is a composite measure of social deprivation (Townsend et al., 1988). Two established data quality control measures ensure data quality and completeness (Horsfall et al., 2013; Maguire et al., 2009).

### 2.3. Study population

The study population comprised men and women aged 18–99 years with a prior Read code in their primary care records indicative of a bipolar disorder diagnosis (Supplemental Table s1). A separate comparison cohort of people without SMI was formed, matched to the bipolar disorder study population on practice, gender, and age at baseline. Each individual with bipolar disorder was matched with up to six people without SMI.

### 2.4. Setting and Quality and Outcomes Framework context

The setting was UK general practice, over the period 1 April 2000–31 March 2013, which includes time periods before and after the introduction of, and subsequent amendments to, the QOF scheme for SMI (British Medical Association, 2014). SMI has been included in QOF since 2004. Initially, the QOF for SMI rules comprised keeping a register of people with SMI and offering them an annual review. In April 2006, general lifestyle screening was incorporated. In April 2011 alcohol screening was added, whereby general practices are offered up to 4 QOF points (£133.76 per point in 2012/2013) for recording of alcohol consumption for people with SMI during the preceding 15 months.

### 2.5. Principal outcome: alcohol consumption recording

Three different means of recording of alcohol consumption in THIN were considered:

1. Read Codes indicative of level of alcohol consumption (Supplemental Table s2).
2. Read Codes indicative of use of a validated alcohol screening test (Supplemental Table s3).
3. Continuous measure of drinking (e.g. units per week).

### 2.6. Socio-demographic characteristics

Patterns in alcohol recording by the following characteristics were investigated: gender, age, registration status (newly registered with the GP in the last year versus registered for over one year), Townsend deprivation quintile, and UK region (former Strategic Health Authority for England, and country for Wales, Scotland and Northern Ireland).

### 2.7. Statistical analysis

To address the first aim, (cross-sectional study to examine socio-demographic variations in recording since the addition of alcohol screening to the QOF for SMI in 2011) the study population was restricted to those individuals with bipolar disorder with complete follow up during the period 1 April 2011–31 March 2013. The relative risk of having an alcohol record, by 10-year age group, deprivation quintile, UK region, and registration status was estimated from multivariable Poisson regression, stratifying by gender, and adjusting for the other demographic characteristics, with robust standard errors to account for clustering of individuals within general practices.

To address the second aim (cohort study to compare time-trends in alcohol recording among people with and without bipolar disorder), the full study sample of people both with and without bipolar disorder was used. Rates of recording of alcohol consumption (any record type) per 1000 person-years were computed among those with and without bipolar disorder during two-year periods between April 2000 and March 2013 (reflecting QOF reporting periods). Rate ratios of alcohol recording comparing individuals with bipolar disorder against individuals without SMI were estimated using Poisson regression, adjusting for age, gender, deprivation, and UK region, with robust standard errors to take into account clustering within practices. An interaction between bipolar disorder status (yes or no) and time period was included to assess whether differences in recording among individuals with and without SMI have changed over time.

## 3. Results

### 3.1. Alcohol recording levels among adults with bipolar disorder in 2011–2013

Among 6768 individuals from 409 general practices, 5663 (84%) individuals had a relevant alcohol consumption record during the two-year period. 80 practices (19.6%) had 100% recording levels. Supplemental Fig. s1 illustrates the types of alcohol data recorded among these 5663 individuals. 243 (4.3%) had a Read code for an alcohol screen (with or without additional alcohol data). 2893 (51.4%) individuals had a record of the units of alcohol consumed. Of the 3787 records comprising Read codes for alcohol consumption, 3750 (99%) were codes listed as eligible for recompense in the QOF for SMI (Supplemental Table s2). Alcohol recording levels were higher in women (85.1%), compared with men (81.6%) and were lowest in the youngest and oldest age groups (Table 1 and Supplemental Table s4). There were no statistically significant differences in recording levels by deprivation, registration status, or UK region.

### 3.2. Time trend in alcohol recording, comparing adults with and without bipolar disorder

In total, 14,051 individuals with bipolar disorder and 90,023 individuals without SMI from 484 practices were included in this time-trend analysis. Demographic characteristics are presented in Supplemental Table s5. Rates of alcohol recording increased rapidly over time among individuals with bipolar disorder with an average annual increase in recording rate of 20% (95% CI 19% to 21%), and a more than 9-fold increase over the 13 year period April 2000–March 2013 (Table 2 and Supplemental Table s6). Recording rates rose particularly rapidly between the periods April 2009–March 2011 and April 2011–March 2013, that is, following the addition of alcohol screening to the QOF for SMI in April 2011 (Supplemental Fig. s2). There was a comparatively modest average

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