The prevalence and correlates of alcohol use disorder amongst bipolar patients in a hospital setting, Malaysia

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Abstract

Objective. To determine the prevalence of alcohol-use disorder and associated correlates amongst bipolar patients in a university hospital in Malaysia. Methods. In this cross-sectional study, a total of 121 bipolar disorder patients were included. Their alcohol use disorders were assessed with the Mini International Neuropsychiatric Interview (plus version) and the Addiction Severity Index-Lite-Clinical Factors version. The number of lifetime hospitalizations and the survival days (the number of days between the last discharge and the most current readmission) were calculated. Results. The prevalence of alcohol-use disorder amongst bipolar patients was 18.2%. Indian ethnicity was the only demographic factor that was statistically associated with alcohol-use disorder (p < 0.03). Those with alcohol-use disorder had a significantly higher rate of suicidal attempt (p < 0.01) and more psychiatric hospitalizations than those without after adjusting for gender, race, employment status, education level and duration of illness (p < 0.01). Conclusions. The prevalence of alcohol-use disorder was low in bipolar patients but high in the general population of Malaysia. Since alcohol-use disorder, as well as the potential interactions with the course of the disorder, is highly prevalent amongst bipolar patients, alcohol use should be addressed in these patients.

Key words: Alcohol, bipolar disorder, prevalence, risk factor, Malaysia

(Received 11 June 2012; accepted 14 November 2012)

Introduction

Alcohol-use disorder (AUD) is very common in patients with bipolar disorder, and it is associated with several unfavourable outcomes, such as violence, cognitive impairment and treatment non-adherence (Brown et al. 2008). Thus, bipolar patients with moderate alcohol consumption are found to be associated with poorer social and familial adjustment, severer manic symptoms and increased utilization of health-care (Lagerberg et al. 2010). The lifetime prevalence of alcohol dependence and/or AUD in bipolar patients has also been reported to be higher than in all other axis I psychiatric diagnoses (Frye et al. 2003).

In the United States, an estimated 56% of patients with bipolar disorder experience alcohol abuse and 38% experience alcohol dependence during their lifetime (Merikangas et al. 2007). In Asian countries like Taiwan, only 8.6% was reported, which was probably due to the lower prevalence of substance abuse in that country (Lin et al. 2011). Nevertheless, the long-term psychosocial outcomes, especially marriage, work and social adjustment, amongst the bipolar patients with AUD were not any better when compared with those in the western population (Tsai et al. 1997). Various studies have quoted a wide range of variability in the rates of alcohol and drug abuse; however, taken together those studies underscore that substance abuse occurs in bipolar patients at high rates (Cassidy et al. 2001).

The relationship between AUD and bipolar disorder remains unclear despite the fact that these two disorders are strongly associated. Some studies reported that alcohol is used to alleviate unpleasant psychiatric symptoms (e.g. depressive symptoms or raving thoughts) (Weiss et al. 2004) or to induce pleasurable feelings (e.g. hypomania) (Khantzian 1985). Genetic overlapping may be associated in the patients with bipolar disorder and AUD because both the disorders share similar mechanisms involving impulsivity, rewarding and behavioural sensitization (Strakowski et al. 2000; Swann 2010). High familial association between AUD and bipolar disorder, with an odds ratio of 14.5, was found in a study (Preisig et al. 2001). This postulation was further strengthened when Ingraham showed that amongst the bipolar adoptees, AUD was more common in the biological relatives than in the control group (Preisig et al. 2001).

Some studies found that lifetime AUD was significantly related to poorer functioning, increased lifetime history of suicide attempts, greater symptomatic severity, greater number of hospitalization and co-morbid with other psychiatric disorders, and used more number of medications (Cassidy et al. 2001; Sonne et al. 1994; Strakowski et al. 2005; Tsai et al. 1997). Although many studies have tried to examine the associations between alcohol and the course of...
bipolar disorder, the results have been inconsistent. AUD in bipolar disorder is also associated with increased impulsivity which in turn the likelihood of suicidal attempts (Swann 2010). Singh et al. (2005) also found that quality of life in terms of physical health, psychological health, and environmental and social relationships was lower in bipolar patients with AUD compared with bipolar patients without AUD (Singh et al. 2005). However, in contrast to these studies, Gummattira et al. (2010) recently reported that patients with bipolar disorder without AUD had more previous episodes, longer hospital stays, and fewer days in the community between hospital admissions when compared with those with AUD (Gummattira et al. 2010).

To date, there are no local data on the prevalence of AUD in patients with bipolar disorder in Malaysia. The current study was conducted to estimate the prevalence of clinically diagnosed AUD in a university hospital in Malaysia, and to analyse the associated demographic factors and clinical correlates of AUD in this group of patients.

Methods

Sample

Universal sampling was used in this study where all patients who attended the psychiatric unit (outpatient and inpatient) in a teaching hospital in Kuala Lumpur, Malaysia were recruited from March 2009 to September 2010. Inclusion criteria were (a) fulfilling DSM-IV-TR (Association 1994) criteria for bipolar disorder I or bipolar disorder II, (b) being at least 18 years of age, (c) providing written consent and (d) being able to understand and communicate in English or Bahasa Malaysia to complete study measurements. Exclusion criteria were (a) having Axis I diagnosis other than bipolar disorder or substance-use disorder (based on Mini International Neuropsychiatric Interview), (b) having an organic mental disorder, (c) having a diagnosis of mental retardation and (d) experiencing unstable general medical conditions.

All patients with bipolar disorder in the clinic and ward were identified and approached for the study. After a discussion of study details with the researchers, those who had given their written informed consent and agreed to participate in the study were recruited. The study was conducted in accordance with the Declaration of Helsinki and the Medical Ethic Committee of this teaching hospital which approved and monitored the study (Ethical Committee Reference Number 721.7).

Study design

This is a cross-sectional study, face-to-face interview, using Mini International Neuropsychiatric Interview (MINI), bipolar and plus version 5.0.0 (Sheehan et al. 1998), and the Addiction Severity Index-Lite-Clinical Factors version (ASI-Lite-CF Version) by the first author (Anne YHA) (Cacciola et al. 2007). Demographic data (age, personal income, gender, race, education level, employment status and marital status) were collected.

The MINI, bipolar version was used to establish the diagnosis of bipolar disorder. The MINI, plus version 5.0.0 was used to assess and screen for substance-use disorders (dependence and abuse), including alcohol, cannabis, stimulants, opioids, cocaine, hallucinogens, nicotine, glue, sedatives/hypnotics/anxiolytics and other substances. A person is classified as having substance dependence when he or she fulfills more than three of the following seven criteria: tolerance, withdrawal symptoms, persistent desire or unsuccessful efforts to reduce the use of substances, excessive time spent to obtain substance or recover from the effects, social, occupational and recreational pursuits, which are reduced because of the substance use, and continued use of the substance despite knowledge of substance-related harm.

ASI-Lite-Clinical Factors version was used to assess the four areas of a patient’s life: medical, employment/support, family/social, and psychiatric (Cacciola et al. 2007). On the ASI-Lite, each problem area is divided into two parts, namely the objective and subjective items. Examples of objective items in the medical domain include the frequency of hospitalization for medical problems and the number of prescription medications. A composite score, ranging from 0 (no problem) to 1 (extreme severity), is calculated for each of the domains based on the objective items (McGahan et al. 1986). The subjective items comprised a 5-point scale ("not at all" to "extremely"), where the patients indicate their severity of the problem by rating two items (how bothered they are and how much they wish to receive additional treatment) on it. Demographic data, number of lifetime psychiatric hospitalizations, lifetime suicide attempts and number of medications prescribed were also obtained from the ASI-Lite.

Survival days were defined as the total number of days between the last discharge and the most current readmission for all subjects who had been readmitted to the hospital. The dates of the last discharge and most current readmission were obtained from their case notes (Gummattira et al. 2010).

Statistical analyses

All analyses were conducted by using the statistical package for the social sciences (SPSS) version 16.0 (SPSS, Chicago, IL, USA). Descriptive statistics were used for the baseline characteristics of the study subjects. Demographic characteristics such as age, personal income, gender, race, education level, employment status and marital status were compared between the AUD and non-AUD groups. ASI scores of medical (MCOMP), employment/support (ECOMP), family (FCOMP) and psychiatric (PCOMP) components were calculated by using Compsscore Calculation, Microsoft Office Excel 1997 and compared between AUD and non-AUD. Chi-square or Fisher exact test was used for the comparison of categorical variables between AUD and non-AUD groups. Odds ratios (ORs) and their 95% confidence interval (CI) were calculated for categorical variables. The mean of the continuous variables were compared using Student’s T-test. The ORs and difference of means were adjusted for the clinical relevant factors of the outcomes measurements (i.e. age, gender, race, and duration of illness, employment status, education level and abuse of other
Substances except alcohol) using either linear or binary logistic regression model. Kaplan–Meier survival method was used for the analysis of the re-hospitalization period. All statistical tests were two-tailed at the significant level of 0.05.

Results

Demographic Data

One hundred and twenty one of 130 bipolar patients consented for the study. There were nine eligible subjects who refused to participate. Almost half of the participants were females with the mean age of 42 years (SD = 13.4). Majority of the study subjects were Chinese (45.5%), followed by Indians (25.5%) and Malays (24%). Half of them were married, 10.7% were divorced, 4.1% separated and the rest were widowed. 52.9% of them had completed secondary education. More than a quarter of the subjects were unemployed. Majority of the subjects were earning around MYR2400 monthly, which converts to approximately USD755. About half of the subjects had a family history of mood disorders and majority of the patients were diagnosed with bipolar I disorder (96.7%).

Prevalence of AUD in bipolar patients

The overall prevalence of AUD in bipolar patients in this study was 18.2%. The current and lifetime prevalence of alcohol dependence were 4.1% and 9.9%, respectively. The current and lifetime prevalence of alcohol abuse were 8.3% and 17.4%, respectively.

Comparison of bipolar patients with non-AUD and AUD

Tables I and II showed the univariate analysis of the association between demographic variables and AUD. The results showed that male (OR = 5.53, p < 0.05) and Indian (OR = 3.9, p < 0.05) bipolar patients were associated with higher risk of AUD. On further multivariate analysis, it was found that Indian ethnicity was the only significant factor (OR = 3.528, 95% CI = 1.134 to 10.974, p < 0.029).

Onset of bipolar, numbers of lifetime psychiatric hospitalization and ASI score were compared between bipolar patients with and without AUD (Table III). The comparison of numbers of medication and suicidal attempts in this lifetime is shown in Table IV. AUD group was found to be statistically significantly better in terms of ECOMP score (P = 0.016) and a higher risk of lifetime suicidal attempts (P < 0.01) when compared to the non-AUD group after adjusting for gender, race, employment status, education level, duration of illness and other substance-use disorder with or without alcohol. When the period of re-hospitalization of bipolar patients with AUD and non-AUD was analysed with Kaplan–Meier Survival analysis, it was statistically significant higher for those with AUD (log-rank chi square = 26.238; df = 1; p < 0.01) (Table V).

Table I. Comparison between non-alcohol use and alcohol-use disorder group amongst bipolar patient samples: age and personal income per month.

<table>
<thead>
<tr>
<th>Socio-demographic characteristic</th>
<th>Non-alcohol</th>
<th>Alcohol</th>
<th>Difference</th>
<th>Adjusted difference</th>
<th>95%CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>42.21 (13.10)</td>
<td>42.64 (14.99)</td>
<td>−0.60</td>
<td>394.22</td>
<td>−7.91 to 6.41</td>
<td>P = 0.84</td>
</tr>
<tr>
<td>Personal income per month</td>
<td>2389.72 (2346.09)</td>
<td>2617.27 (2588.67)</td>
<td>−227.55</td>
<td>876.53 to 1664.97</td>
<td>P = 0.54</td>
<td></td>
</tr>
</tbody>
</table>

*a p < 0.05, **p < 0.01, CI = Confidence Interval.
*Other substances use = use of other substances with or without alcohol.
*Adjusted of ‘other substance-use disorder.

Table II. Comparison between non-alcohol use and alcohol-use disorder group amongst bipolar patient samples: gender, ethnicity, employment status, marital status and education level.

<table>
<thead>
<tr>
<th>Socio-demographic characteristic</th>
<th>Non-alcohol</th>
<th>Alcohol</th>
<th>OR</th>
<th>Adjust OR</th>
<th>95%CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>41 (41.4)</td>
<td>20 (90.9)</td>
<td>14.15</td>
<td>6.33</td>
<td>1.24 to 32.25</td>
<td>*0.03</td>
</tr>
<tr>
<td>Female</td>
<td>58 (58.6)</td>
<td>2 (9.1)</td>
<td>2.26</td>
<td>3.85</td>
<td>0.89 to 16.67</td>
<td>0.07</td>
</tr>
<tr>
<td>Malay</td>
<td>26 (26.3)</td>
<td>3 (13.6)</td>
<td>1.26</td>
<td>4.20</td>
<td>1.38 to 12.82</td>
<td>*0.01</td>
</tr>
<tr>
<td>Non-Malay</td>
<td>73 (73.7)</td>
<td>19 (86.4)</td>
<td>1.26</td>
<td>4.20</td>
<td>1.38 to 12.82</td>
<td>*0.01</td>
</tr>
<tr>
<td>Indian</td>
<td>20 (20.2)</td>
<td>12 (54.5)</td>
<td>1.26</td>
<td>4.20</td>
<td>1.38 to 12.82</td>
<td>*0.01</td>
</tr>
<tr>
<td>Non-Indian</td>
<td>79 (79.8)</td>
<td>10 (45.5)</td>
<td>0.21</td>
<td>0.32</td>
<td>0.09 to 1.11</td>
<td>0.07</td>
</tr>
<tr>
<td>Chinese</td>
<td>51 (51.5)</td>
<td>4 (18.2)</td>
<td>0.21</td>
<td>0.32</td>
<td>0.09 to 1.11</td>
<td>0.07</td>
</tr>
<tr>
<td>Non-Chinese</td>
<td>48 (48.5)</td>
<td>18 (81.8)</td>
<td>0.21</td>
<td>0.32</td>
<td>0.09 to 1.11</td>
<td>0.07</td>
</tr>
<tr>
<td>Married</td>
<td>44 (44.4)</td>
<td>6 (27.3)</td>
<td>2.13</td>
<td>1.93</td>
<td>0.64 to 6.02</td>
<td>0.26</td>
</tr>
<tr>
<td>Non-married/divorced/single</td>
<td>55 (55.6)</td>
<td>16 (72.7)</td>
<td>3.30</td>
<td>1.30</td>
<td>1.30 to 2.87</td>
<td>0.84</td>
</tr>
<tr>
<td>Employment</td>
<td>72 (72.7)</td>
<td>16 (73.3)</td>
<td>1.00</td>
<td>0.88</td>
<td>0.27 to 2.87</td>
<td>0.84</td>
</tr>
<tr>
<td>Non-employment</td>
<td>27 (27.3)</td>
<td>6 (27.3)</td>
<td>0.83</td>
<td>0.91</td>
<td>0.32 to 2.58</td>
<td>0.85</td>
</tr>
<tr>
<td>Below secondary education</td>
<td>45 (45.5)</td>
<td>11 (50.0)</td>
<td>0.83</td>
<td>0.91</td>
<td>0.32 to 2.58</td>
<td>0.85</td>
</tr>
</tbody>
</table>

*a p < 0.05, **p < 0.01, OR = Odds Ratio.
*Other substances use = use of other substances with or without alcohol.
*Adjusted of ‘other substance-use disorder.
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Table III. Comparison between non-alcohol and alcohol-use disorder group amongst the bipolar patients in this study: Onset of bipolar, numbers of medication use, numbers of lifetime psychiatric hospitalization, ASI score.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Non-alcohol Mean (SD)</th>
<th>Alcohol Mean (SD)</th>
<th>Difference of mean</th>
<th>Adjusted difference of mean</th>
<th>95%CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset of bipolar</td>
<td>28.66 (10.89)</td>
<td>28.91 (10.80)</td>
<td>0.25</td>
<td>-1.93</td>
<td>-7.79 to 3.93</td>
<td>0.52</td>
</tr>
<tr>
<td>Numbers of lifetime psychiatric hospitalization</td>
<td>3.22 (3.01)</td>
<td>4.73 (4.22)</td>
<td>1.51</td>
<td>-0.63</td>
<td>-9.8 to 2.24</td>
<td>0.44</td>
</tr>
<tr>
<td>ASI score</td>
<td>MCOMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.08 (0.19)</td>
<td>0.11 (0.19)</td>
<td>0.03</td>
<td>-0.03</td>
<td>-0.09 to 0.13</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>ECOMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.39 (0.32)</td>
<td>0.19 (0.25)</td>
<td>-0.21</td>
<td>-0.21</td>
<td>-0.43 to -0.04</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>FCOMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.26 (0.17)</td>
<td>0.28 (0.18)</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.11 to 0.08</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>PCOMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.29 (0.18)</td>
<td>0.31 (0.23)</td>
<td>0.017</td>
<td>-0.04</td>
<td>-0.02 to 0.15</td>
<td>0.39</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01
− Other substances use = use of other substances with or without alcohol
Adjusted of gender, race, education level, employment status and other substance-use disorder.

Discussion

This cross-sectional study examined the prevalence of AUD in a group of bipolar patients in a hospital setting, as well as the related demographic features. It also studied the associated clinical correlates, such as onset of bipolar disorder, numbers of hospitalization, suicidal attempts and numbers of medication used between bipolar patients with or without AUD. The prevalence of AUD in this study was 18.2%, which was higher than the result obtained from Taiwanese study (Tohen et al. 1998) but lower than the western country data that ranged between 31% and 52.6% (Cassidy et al. 2001; Chengappa et al. 2000). The prevalence was also found to be higher than that of the general population in Malaysia, which was quoted to be only 3.74% (Organisation 2011).

Looking at the demographic data in this study, we found that 60% of the bipolar subjects were of male Indian ethnicity. In other words, Indian bipolar patients were more likely to have AUD (p < 0.001), in a multi-racial society in Malaysia. This could be explained by the fact that alcohol consumption is strictly prohibited in the majority of Malay population who are also Muslims. The Chinese community is mainly descendants of the Han population, whereby majority of them have deficiency in aldehyde dehydrogenase (Teng et al. 1979), and this is probably “protecting” the bipolar patients against dependence and alcohol abuse. In addition to the different cultural and religious backgrounds contributing to a low prevalence in AUD, we also noted that the participants in this study were mainly more educated (more than half of them completed their secondary education level), married (50%) and older (mean age of 42 years) than in other studies. All these demographic factors have been found to be negatively associated with AUD in the general population (Lin et al. 1998) and amongst people with bipolar disorder.

Male patients were more likely to be having AUD (p < 0.001) which was consistent with the previous studies (Lagerberg et al. 2010; Tohen et al. 1998; Tsai et al. 2001). In 2011, the World Health Organization (WHO) report also mentioned that the 12-month prevalences of AUD amongst the male and female populations in Malaysia were 3.74% and 0.42%, respectively (Organisation 2011).

In our study, we did not find any other significant associations in the bipolar patients with AUD. This was in contrast to some previous studies which had shown that lower income or lower education level, and widowed/separated/divorced patients were associated with higher risk of substance use (Cassidy et al. 2001; Grunebaum et al. 2006). This could probably be due to the fact that the participants in this study were mainly from urban areas, having higher income and being more educated.

Regarding suicidality, we found that bipolar patients with AUD showed a higher risk of suicidal attempt, with odds of five times higher in their lifetime, compared with those

Table IV. Comparison between non-alcohol and alcohol use disorder group among the bipolar patients in this study: number of medication used and Suicidal attempt.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Non-alcohol N (%)</th>
<th>Alcohol N (%)</th>
<th>Adjusted OR</th>
<th>95%CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of medication used</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 2 medication</td>
<td>57 (57.6)</td>
<td>8 (36.4)</td>
<td>2.375</td>
<td>1.543*</td>
<td>0.499 to 4.761</td>
</tr>
<tr>
<td>&gt; 2 medication</td>
<td>42 (42.2)</td>
<td>14 (63.6)</td>
<td>3.087</td>
<td>9.709**</td>
<td>1.715 to 55.56</td>
</tr>
<tr>
<td>Suicidal attempt</td>
<td>13 (13.1)</td>
<td>7 (31.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01
OR = odds ratio
− Other substances use = use of other substances with or without alcohol
Adjusted of gender, race and other substance use.
without AUD. This finding was consistent with other studies (Dalton et al. 2003; Swann et al. 2005) which postulated that alcohol would increase the impulsivity and subsequent likelihood of suicidal attempts. Another postulation put forward by the authors was that the subjects with severer form of bipolar disorder might use alcohol to self-medicate, which in turn increases the chances of suicidality.

The bipolar patients with AUD tended to have shorter re-hospitalization period. This finding was in line with that of previous studies, whereby the bipolar patients comorbid with AUD had greater symptomatic severity causing early relapse of the illness and therefore early re-hospitalization (Cassidy et al. 2001; Strakowski et al. 2005).

Many studies showed that bipolar patients with AUD had poor outcomes such as poor employment status, impaired social functioning, lower quality of life and more comorbid medical illnesses (Kilbourne et al. 2007; Mazza et al. 2010; Reich et al. 1974). However, interestingly, we found that the bipolar patients without AUD scored higher in the ECOMP in ASI. This translated to bipolar patients without AUD having poorer performance and more problems in their employments, when compared to those with AUD. We postulated that the bipolar patients with AUD were of a “heterogeneous” group, consisting of individuals who had severer bipolar disorder with higher risk of having AUD, and those with “pre-existing genetic liability” who needed alcohol to trigger their bipolar disorder (Gummatittira et al. 2010; Öngür et al. 2009; Strakowski et al. 1997). The latter group tended to have a more rapid recovery and less severe course of bipolar illness once they stopped consuming alcohol, hence they were able to resume work earlier. However, other factors such as adherence to medications and clinical status of the bipolar illness, which were not examined in this study, might have also contributed to these results.

### Limitations and conclusion

There were several limitations in this study. First, the sample size of AUD cases was relatively small whereby only 121 bipolar patients were studied. This could have limited the power to detect statistically significant differences. A larger sample size would have been ideal to provide a more reliable estimate of the prevalence of AUD amongst bipolar patients in Malaysia. In addition to that, having a control group comprising non-psychiatric subjects with similar demographic characteristics would enable us to evaluate the relative contribution of bipolar disorder to the risk of AUD.

Second, this was a cross-sectional study whereby we were unable to explore the cause and effect relationship between clinical correlates of AUD in bipolar disorder. Thus, for instance, it is not known whether more severely ill patients are more likely to have AUD, whether AUD contributes to more psychiatric hospitalizations, or both.

Third, this study was conducted in a semi-privatized teaching hospital where patients had to pay for their treatment. This could have resulted in limitation of generalizability of the study findings, due to probably only the bipolar patients from a higher socioeconomic group being studied.

Fourth, despite the fact that this study had tried to minimize the possibility of bipolar patients reducing their alcohol intake, by counter-checking with the patients’ family members and the treating clinicians, there still stood a chance that this study had underestimated the prevalence of AUD amongst this group of bipolar subjects. In addition, social stigma from reporting alcohol use, particularly in certain ethnic groups, might have also contributed to under-reporting.

Finally, all the bipolar patients who presented to our clinics were included in this study regardless of their symptomatology and diagnoses. The heterogeneity of the sample in terms of diagnoses and symptomatology might have resulted in bias in this study.

In conclusion, the prevalence of AUD was low in bipolar patients but high in the general population of Malaysia. Male Indian bipolar patients were found to have higher risk of AUD. AUD was associated with a higher rate of suicidal attempt in their lifetime and shorter period of re-hospitalization. Owing to the potential interactions of AUD with the course of bipolar disorder, alcohol use should be addressed in the management of these groups of patients.

### Key points

- The prevalence of alcohol-use disorder in bipolar patients was higher than in the general population of Malaysia.
- Male Indian bipolar patients were found to have higher risk of alcohol-use disorder.
- Alcohol-use disorder was associated with a higher rate of suicidal attempt and shorter period of re-hospitalization.

### Acknowledgements

None.

### Statement of interest

None of the authors reports conflicts of interest.
References


