



Psychiatric Comorbidities of Substance Use Disorders: Does Dual Diagnosis Predict Inpatient Detoxification Treatment Outcomes?

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Abstract

Comorbidity of substance use and psychiatric disorders, particularly depressive disorders, are well established. The impact of comorbidity on treatment outcomes, particularly following short-term inpatient detoxification and medical management units, has yet to be fully explored. This study reviewed 456 records of patients voluntarily presenting for medical management of substance misuse in Sydney, Australia. Documented psychiatric comorbidities and primary substance of misuse were extracted and used to predict length of stay, discharge against medical advice and number of readmissions. Our results showed that psychiatric comorbidity did not significantly predict treatment outcomes, although depression was reported in more than half our cohort, along with elevated rates of Post-traumatic Stress Disorder, anxiety disorders and bipolar affective disorders. Medication non-compliance and primary substance of misuse significantly predicted length of stay and discharge against medical advice. Further research into how specific substances interact and affect specific psychiatric disorders is needed to guide optimal treatment options.

Keyword Substance use disorder · Psychiatric comorbidity · Dual diagnosis · Depression · Alcohol · Drugs

Throughout Australia, England and America, the 12-month prevalence of any psychiatric illness is estimated at 17 to 20% (McManus et al. 2016; SAMHSA, 2013; Slade et al., 2009), with the lifetime prevalence of any psychiatric illness in Australia as high as 46% (Slade et al., 2009). The 12-month prevalence of anxiety and affective disorders in Australia is 14% and 6% respectively, with 5% of Australians likely to experience a substance

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use disorder (SUD) in the preceding 12 months (Slade et al., 2009). Comorbidity of psychiatric disorders and SUDs is high, with 40 to 84% of patients within substance-use treatment settings meeting diagnostic criteria for a psychiatric disorder (Lehman et al., 1993; SAMHSA 2013; Watkins et al., 2004). The most frequent comorbid psychiatric diagnoses were affective and anxiety disorders (Chen et al., 2011), with 20% of Australians with a SUD also meeting the criteria for an affective disorder and 33% for an anxiety disorder, with rates even higher throughout the USA and England (Brooner et al., 1997; Broome et al., 1999). The prevalence of psychiatric comorbidity varies between classes of substances, with 37% of people with an alcohol use disorder and 53% of people with an illicit SUD also meeting the criteria for a comorbid psychiatric disorder (Castel et al., 2006; Degenhardt et al., 2001; Horsfall et al. 2009).

Major depressive disorder (MDD) and SUDs occur frequently (Brown et al., 1998; Handley et al., 2016), and the co-occurrence of alcohol use disorder (AUD) with MDD is one of the most prevalent combinations throughout adolescence and adulthood (Brière et al., 2014; Handley et al., 2016). Whilst strongly associated with AUD, affective and anxiety disorders may have even stronger associations with illicit SUDs (Kessler et al., 1996; Lai et al., 2015; Merikangas et al., 1998). Bipolar affective disorder (BAD) is also associated with a high degree of SUDs, with 60–70% of people with BAD having a comorbid SUD (Goldberg, 2001). Similarly, people with schizophrenia are three times more likely to have a comorbid AUD and six times more likely to have a comorbid SUD (Regier et al., 1990). Lifetime MDD prevalence rates in patients throughout Australian treatment centres range from 35% to 79%, with at least half of people clinically depressed on admission and expressing suicidal ideation (Handley et al., 2016; Kingston et al., 2017) which can complicate acute management and treatment outcomes.

Patients with SUD and comorbid psychiatric conditions have high levels of treatment drop-out (Amodeo et al., 2008; Krawczyk et al., 2017; Lipsky et al., 2010; Tull & Gratz, 2012) with many discontinuing therapy within the first few weeks of inpatient treatment (Amodeo et al., 2008). Completion rates can vary from 41 to 73% (SAMHSA, 2013) with many patients undergoing repeated early discharges and re-admissions (Hser et al., 2004). Treatment of patients with psychiatric and SUD comorbidities requires a more complex service with psychiatric, substance dependence and medical treatments. A global overview of these treatment modalities is frequently overlooked (Amodeo et al., 2008; Horgan, 1997). In addition to more frequent relapses, these patients tend to have increased morbidity, higher suicidality and a higher financial cost of treatment (Cornelius et al., 1995; Goodman et al., 1997; Hunter et al., 2012). Whilst previous research suggests that co-occurring psychiatric and SUDs are related to poorer treatment outcomes and treatment retention, inconsistency still exists within the literature regarding treatment outcomes across specific psychiatric illnesses and specific SUDs (Amodeo et al., 2008; Kelly et al., 2001; Broome et al., 1999; Brooner et al., 1997; Ling et al., 2018). Additionally, although detoxification units represent the second most common type of treatment service at discharge for patients undergoing substance abuse treatment recorded in the American Treatment Episode Data Set (SAMHSA 2021), previous analyses on how psychiatric comorbidity affects treatment completion in SUDs have typically excluded data relating to detoxification units with the rationale that detoxification units are primarily focussed on stabilizing patients with SUDs as opposed to treating them (Krawczyk et al., 2017). Therefore, there is a lack of research on how psychiatric comorbidities affect treatment outcomes in patients with SUDs in detoxification units.

The current study aims to determine the prevalence of psychiatric disorders within a cohort of voluntary detoxification inpatients in Nepean Hospital, Sydney. We aim to (1) determine the prevalence of mental illness and substance usage for both Aboriginal and

non-Aboriginal patients within our cohort and (2) determine if psychiatric comorbidities are associated with early discharges against advice, length of stay and number of repeat admissions. We hypothesise that patients with psychiatric comorbidities will have higher rates of discharges against medical advice and greater rates of repeat admissions.

Methods

Ethics

This project was approved by the Nepean Blue Mountains Local Health District Human Research Ethics Committee (19–45(A)).

Patient Cohort

This study reviewed records from 456 consecutive patients who voluntarily presented to the Centre for Addiction Medicine for medical management of substance misuse. Electronic patient records for all patients admitted between, and including, April 2018 and February 2019. The Local Health District (LHD) consist of 373,205 people from urban and semi-rural zones covering 9179 km² across the four local government areas (LGAs) of Lithgow, Penrith, Blue Mountains and Hawkesbury. Twenty-three per cent of the population is born overseas, and 3.1% of the population identifies as Aboriginal or Torres Strait Islander. Socioeconomic status varies widely within the LHD, with some areas ranking as some of the most disadvantaged in Australia and others some of the least disadvantaged. The LHD is characterised by a high prevalence of smoking, obesity, diabetes, stress, chronic illness and socioeconomic inequalities (Rees et al., 2018).

Data Collection

This study is an 11-month retrospective audit of the rates of psychiatric comorbidity at Nepean Hospital Centre for Addiction Medicine and Detoxification facility from 1 April 2018 to 28 February 2019. The records of every inpatient were examined in order of admission and data from the system including previous emergency department records, mental health admission records, and psychiatry consultation liaison records.

Clinical data (primary substance for admission, main psychiatric diagnosis, medications, history of suicide attempt or ideation, previous detoxification admission, previous mental health admissions, method of discharge and length of stay at the hospital) and demographic information (age, gender, Aboriginal and Torres Strait Islander status) were extracted from the patient file.

Given that withdrawal from various substances can confound a patient's mental state, we generally avoided making any such diagnoses during the acute withdrawal phase. Psychiatric diagnoses were only included if it was clear that it was a formal diagnosis by a general practitioner or psychiatrist. Patient-reported diagnoses were not included. Apart from substance misuse disorders, no other psychiatric diagnoses were made at intake and assessment.

When multiple psychiatric diagnoses were provided, all were documented. For the purposes of this study, psychiatric diagnoses were categorised as follows: (1) unipolar

depressive disorder, (2) schizophrenia and other psychosis, (3) BAD, (4) anxiety, (5) anxiety disorder, (6) post-traumatic stress disorder (PTSD), (7) attention deficit hyperactivity disorder (ADHD), (8) borderline personality disorder (BPD), (9) suicidality and (10) any mental health.

Medication compliance was determined by patient self-reporting, medication listed from a previous hospitalisation or a list provided by their general practitioner. If an appropriate medication was listed or if it was mentioned that they were receiving psychological treatment, the patient was classed as being ‘medication compliant’. If it was noted that either the patient had a diagnosed psychiatric disorder but there were no documented medications, or that they had been prescribed a medication but did not take it/had stopped taking it/took it other than as prescribed, they were classed as ‘medication non-compliant’. For the purposes of this study, medication compliance did not take into account whether or not they received this medication whilst admitted.

Data Analyses

Data was analysed using IBM SPSS Statistics version 24. For analyses, ‘Depression’ included major depressive disorder, dysthymia and depression not otherwise specified. When depression was reported in patient notes, it was assumed to be unipolar depression, unless a diagnosis of BAD was specifically mentioned. ‘Anxiety disorder’ included generalised anxiety disorder, social anxiety disorder, obsessive compulsive disorder, panic disorder, panic attack and specific phobias. ‘Anxiety’ included all the aforementioned anxiety disorders as well as anxiety not otherwise specified. ‘Bipolar affective disorder’ included both bipolar disorder I and bipolar disorder II as well as bipolar disorder not otherwise specified. ‘psychotic disorders’ included schizophrenia, schizoaffective disorder and psychosis not otherwise specified; however, substance-induced psychosis was excluded. Post-traumatic stress disorder, attention deficit hyperactivity disorder and borderline personality disorder were included as their own variables. Antisocial personality disorder, dissociative identity disorder and cluster B traits, whilst reported, were not included in analyses due to either small sample size or difficulty verifying official diagnoses. Due to many patients having psychiatric comorbidities, psychiatric diagnosis categories were not mutually exclusive. ‘Antidepressants’ included selective serotonin reuptake inhibitors (SSRIs), selective norepinephrine serotonin reuptake inhibitors (SNRIs), atypical antidepressants, tetracyclic antidepressants, tricyclic antidepressants (TCAs) and monoamine oxidase inhibitors (MAOIs), as well as ‘antidepressant not otherwise specified’. ‘Antipsychotics’ included both typical and atypical psychotics, as well as antipsychotic not otherwise specified. ‘Mood stabilisers’ included lithium, lamotrigine and sodium valproate. The three classes were not mutually exclusive.

Linear mixed models were used to test for predictors of and associations with depression, discharges against medical advice, number of admissions and length of admission. Continuous dependent variables were assessed for normality and homogeneity and log-transformed when necessary. Independent variables were also assessed for multicollinearity. Patients that had been admitted multiple times to Nepean and therefore had multiple entries were handled with a repeated measures variable in the linear mixed models for the length of admission and the discharge against medical advice analyses. Multiple presentations were then filtered out for the depression and the number of admissions analyses, as well as for calculation of all percentages. Linear mixed models were run using a manual backwards elimination technique. All variables were entered into the model, and the least

significant variable was removed each run, with Akaike information criterion (AIC) used to assess each iteration. Selection of the final model was based on either the model with the lowest AIC or when the difference between the AIC of two subsequent model iterations was marginal.

Results

Prevalence of Mental Illness and Substance Use

During the period of April 2018 to February 2019, 456 patients were voluntarily admitted for detoxification, with an average age of 39 years (Table 1). Males accounted for 66% of admitted patients and 17% of admitted patients identified as Aboriginal or Torres Strait Islander (Table 1). Among the included substances, alcohol misuse accounted for the largest proportion of primary substances with 45% of admissions (Table 2). This was followed by amphetamines, accounting for 34% of admissions (Table 2). Cannabinoid admissions accounted for 1% of admissions (Table 2).

Of the 27% of people that discharged against medical advice, 65% were male and 22% identified as Aboriginal or Torres Strait Islander. People with depression comprised the greatest percentage of those with a comorbid psychiatric illness who discharged against medical advice (Fig. 1).

Sixty-six per cent of the cohort reported a diagnosis of any mental illness, with 57% of the cohort reporting a diagnosis of depression, which was highest for those admitted for alcohol (Tables 1 and 2). Non-specific anxiety was reported by 33% of the cohort, with specific anxiety disorders reported by 5% of the cohort (Table 1). Bipolar disorders and post-traumatic stress disorder each accounted for 8% of the cohort, with PTSD reported by 17% of females (Table 1). A history of suicidal ideation, intent or attempt was reported by 35% of the cohort and was highest in those admitted for alcohol and benzodiazepines (Tables 1 and 2).

Forty-three per cent of the cohort reported taking an antidepressant, 16% taking an antipsychotic and 2% taking a mood stabiliser (Table 3). Of those who reported depression, only 69% were taking an antidepressant (Table 3). Similarly, of those who reported a psychotic disorder, only 56% were taking an antipsychotic and of those who reported a bipolar disorder, 24% were taking a mood stabiliser and 68% taking an antipsychotic (Table 3). Medication non-compliance across primary substance ranged between 30 and 60%, with cannabinoids associated with the highest rate of non-compliance (Fig. 2).

Predictors of Inpatient Depression, Admission and Discharge

Gender was significantly associated with a lifetime prevalence of depression in a voluntary inpatient addiction detoxification unit ($F_{1, 454} = 6.42, p = 0.012$), with females more likely to report a current or previous depressive disorder compared to male inpatients ($p = 0.012$). Gender was also significantly associated with the number of repeat admissions ($F_{1, 454} = 4.22, p = 0.041$), with females having a higher number of repeat admissions compared to males ($p = 0.041$).

When gender and a diagnosis of depression were taken into account, the length of inpatient stay was significantly associated with the primary substance of use ($F_{4, 244} = 5.55, p < 0.01$) and medication compliance ($F_{1, 312} = 4.14, p = 0.043$). Patients stayed on average

Table 1 Age and percentage of participants with self-reported and/or formally documented mental health disorders for males, females, Aboriginal and Torres Strait Islanders and non-Aboriginal and Torres Strait Islanders

	Male (<i>n</i> = 301)	Female (<i>n</i> = 155)	Aboriginal and Torres Strait Islander (<i>n</i> = 77)	Non-Aboriginal and Torres Strait Islander (<i>n</i> = 379)	Total (<i>n</i> = 456)
Age <i>mean (SD)</i>	39.23 (11.00)	38.90 (10.16)	35.34 (8.89)	39.88 (10.90)	39.11 (10.71)
Depressive disorder (<i>n</i> = 196)	53%	65%	53%	58%	57%
Bipolar affective disorder (<i>n</i> = 38)	7%	12%	7%	9%	8%
Psychotic disorder (<i>n</i> = 25)	7%	2%	11%	5%	6%
Self-reported anxiety* (<i>n</i> = 151)	30%	40%	31%	34%	33%
Anxiety disorder (<i>n</i> = 21)	5%	5%	5%	1%	5%
Post-traumatic stress disorder (<i>n</i> = 36)	3%	17%	9%	8%	8%
Attention deficit hyperactivity disorder (<i>n</i> = 17)	4%	3%	7%	3%	4%
Borderline personality disorder (<i>n</i> = 14)	1%	8%	5%	3%	3%
Suicidality* (<i>n</i> = 161)	36%	34%	29%	37%	35%
Any mental health disorder (<i>n</i> = 303)	62%	76%	61%	68%	66%
Total	66%	34%	17%	83%	

*Symptom of a mental health disorder, rather than a specific disorder or class of disorders

Table 2 Demographics and percentage of Aboriginal and Torres Strait Islanders and non-Aboriginal and Torres Strait Islanders patients with self-reported and/or formally documented mental health disorders across primary substance of usage

	Alcohol (<i>n</i> = 204)	Benzodiazepines (<i>n</i> = 10)	Amphetamines (<i>n</i> = 157)	Opioids (<i>n</i> = 79)	Cannabinoids (<i>n</i> = 6)
Male	70%	40%	62%	66%	83%
Female	30%	60%	38%	34%	17%
Aboriginal and Torres Strait Islander	8%	30%	27%	19%	0%
Non-Aboriginal and Torres Strait Islander	92%	70%	73%	81%	100%
Age <i>mean (SD)</i>	43.78 (10.11)	39.80 (11.2)	33.51 (9.3)	38.95 (9.2)	28.17 (7.4)
Depressive disorder (<i>n</i> = 196)	60%	60%	57%	48%	67%
Bipolar affective disorder (<i>n</i> = 38)	6%	20%	10%	9%	0%
Psychotic disorder (<i>n</i> = 25)	4%	10%	8%	4%	0%
Self-reported anxiety* (<i>n</i> = 151)	37%	60%	27%	33%	33%
Anxiety disorder (<i>n</i> = 21)	6%	20%	3%	3%	0%
Post-traumatic stress disorder (<i>n</i> = 36)	7%	0%	9%	9%	0%
Attention deficit hyperactivity disorder (<i>n</i> = 17)	2%	0%	7%	3%	0%
Borderline personality disorder (<i>n</i> = 14)	2%	0%	6%	1%	0%
Suicidalilty* (<i>n</i> = 161)	40%	40%	34%	27%	33%
Any mental health disorder (<i>n</i> = 303)	69%	70%	68%	54%	83%
Total	45%	2%	34%	17%	1%

*Symptom of a mental health disorder, rather than a specific disorder or class of disorders

Percentage of Participants Discharging Against Medical Advice by Psychiatric Disorder

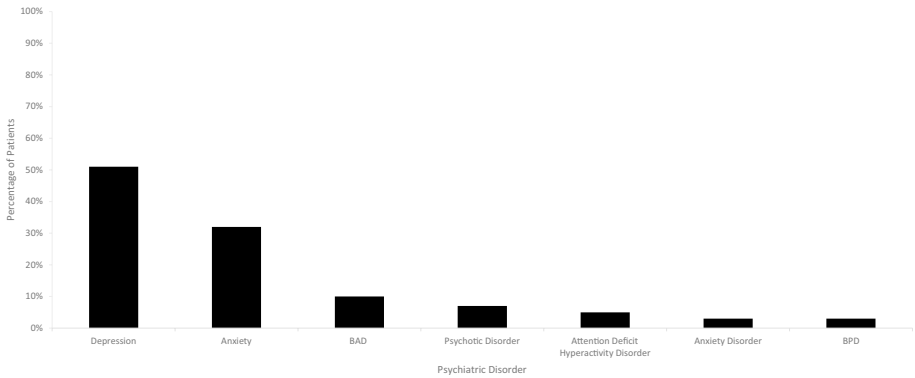


Fig. 1 Percentage of participants discharging against medical advice who have depressive disorders ($n=115$), anxiety (self-reported) symptoms/disorder ($n=66$), BAD (bipolar affective disorder) ($n=12$), psychotic disorders ($n=8$), ADHD (attention deficit hyperactivity disorder) ($n=4$), anxiety disorders ($n=4$), PTSD (post-traumatic stress disorder) ($n=4$) and BPD (borderline personality disorder) ($n=4$)

Table 3 Percentage of participants with a mental health disorder taking a medication within the antidepressant, antipsychotic and/or mood stabiliser class

	Antidepressant ($n=195$)	Antipsychotic ($n=75$)	Mood stabiliser ($n=11$)
Depressive disorder ($n=196$)	69%	24%	4%
Bipolar affective disorder ($n=38$)	61%	68%	24%
Self-reported anxiety* ($n=151$)	66%	21%	3%
Anxiety disorder ($n=21$)	76%	14%	5%
Psychotic disorder ($n=25$)	40%	56%	0%
Post-traumatic stress disorder ($n=36$)	50%	31%	3%
Attention deficit hyperactivity disorder ($n=17$)	47%	12%	6%
Borderline personality disorder ($n=14$)	43%	43%	7%
Total	43%	16%	2%

5.9 days ($SE=0.13$), and those admitted for detoxification from benzodiazepines had the longest length of stay (Fig. 3). Patients admitted for alcohol detoxification stayed an average of 2.8 days longer when compared to cannabis patients ($p=0.030$) and 1.2 days longer when compared to opioid patients ($p=0.007$), however stayed 2.9 days less compared to patients admitted for detoxification from benzodiazepines ($p=0.004$) (Fig. 3). Patients admitted for detoxification from benzodiazepines also stayed 3.3 days longer compared to patients admitted for detoxification from amphetamines ($p=0.01$), 5.1 days longer compared to patients admitted for detoxification from opioids ($p<0.01$) and 3.4 days longer compared to patients admitted for detoxification from cannabis ($p<0.01$) (Fig. 3). Patients who reported taking prescribed medication for a diagnosed psychiatric condition and maintaining compliance with prescribed medication stayed 0.6 days longer, compared to patients who did not take prescribed medication ($p=0.043$).

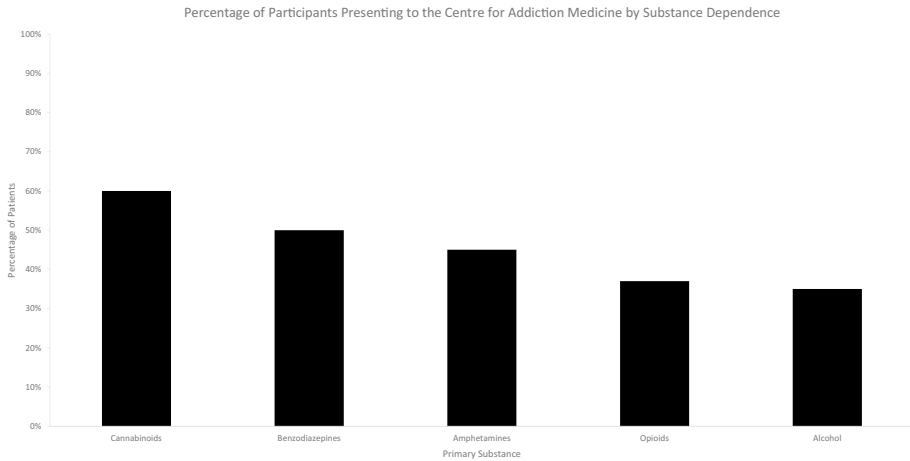


Fig. 2 Percentage of participants presenting to the Centre for Addiction Medicine for the treatment of substance dependence for alcohol ($n = 139$), benzodiazepines ($n = 6$), amphetamines ($n = 103$), opioids ($n = 44$) and cannabinoids ($n = 5$) with a self-reported and/or formally documented mental health disorder that report either no medication or non-compliance with prescribed medication

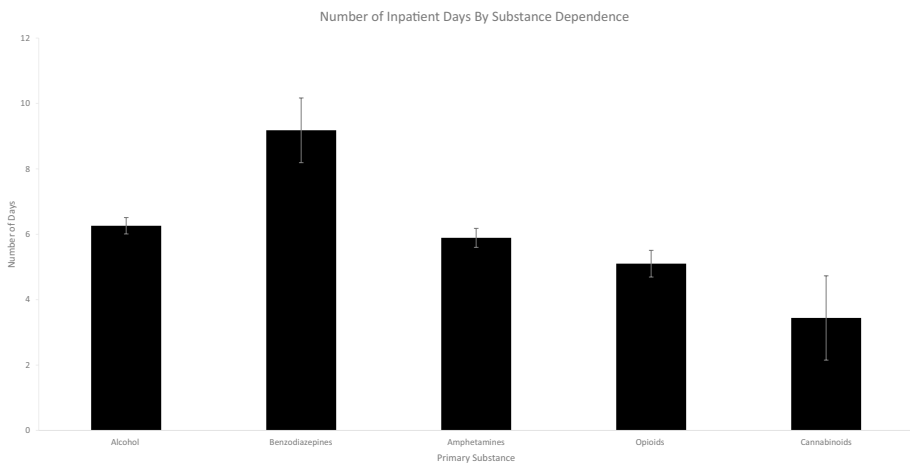


Fig. 3 Number of days that participants spent as an inpatient in the Centre for Addiction Medicine for the treatment of substance dependence for alcohol ($n = 139$), benzodiazepines ($n = 6$), amphetamines ($n = 103$), opioids ($n = 44$), cannabinoids ($n = 5$), regardless of whether they completed treatment or discharged against medical advice. Error bars represent standard error of the mean

Patients who were not taking medication or maintaining compliance with prescribed medication were also more likely to discharge against medical advice ($F_{1, 297} = 7.35$, $p = 0.07$). Primary substance of use was also significantly associated with discharge against medical advice ($F_{4, 261} = 5.70$, $p < 0.01$), with those admitted with cannabinoids as their primary substance of use most likely to discharge against medical advice (Fig. 4). Compared to patients who were admitted for detoxification from alcohol, patients admitted for detoxification for cannabis, amphetamines and opioids were 3.63 times ($p = 0.027$), 2.23

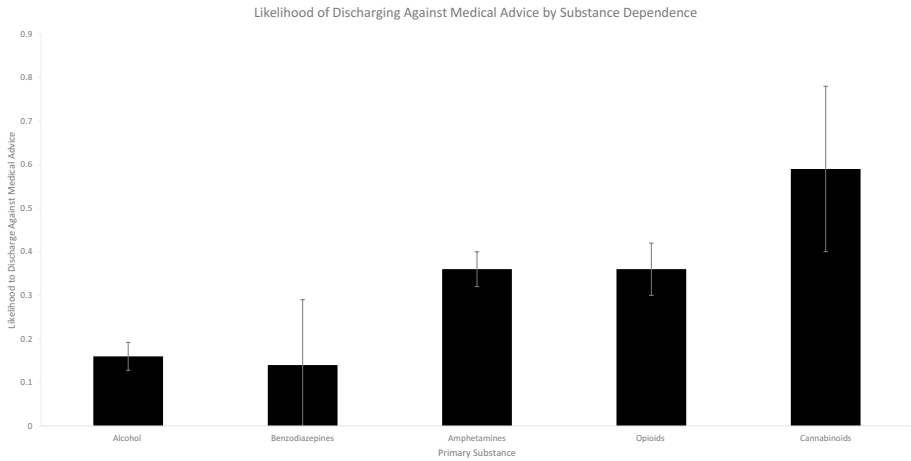


Fig. 4 Likelihood of participants presenting as an inpatient in the Centre for Addiction Medicine for the treatment of substance dependence for alcohol ($n = 139$), Benzodiazepines ($n = 6$), amphetamines ($n = 103$), opioids ($n = 44$), cannabinoids ($n = 5$), to discharge against medical advice. Error bars represent standard error of the mean

times ($p < 0.01$) and 2.21 times ($p = 0.04$) more likely to discharge against medical advice, respectively (Fig. 4).

Discussion

Our Cohort Compared with Literature Data

Whilst the prevalence of psychiatric disorders in our cohort is in keeping with that found in other SUD cohorts (Amodeo et al., 2008; Chen et al., 2011; Kingston et al., 2017), our rates surpass that of the general Australian population. Lifetime prevalence of mood disorders in our cohort (57%) is four times that of the general population, and anxiety disorders are one and a half times that of the general population (McEvoy et al., 2011). Illicit SUDs have previously been associated with higher psychiatric comorbidity compared to alcohol SUDs, and whilst our results are in keeping with this (83% for illicit SUDs and 69% for alcohol SUDs), the prevalence of psychiatric comorbidity in alcohol SUDs in our cohort is more than twice that found in Britain and the USA (Horsfall et al., 2009; Kingston et al., 2017). This may be due to local socioeconomic factors and a greater severity of SUD and/or comorbid psychiatric disorders that typically present to an acute inpatient service, rather than presenting to rehabilitation programs. The prevalence of psychiatric comorbidity for alcohol SUDs in our cohort was equivalent to that of benzodiazepine and methamphetamine SUDs. Particularly concerning was the high prevalence suicidality, which was highest for both people with alcohol SUDs and benzodiazepine SUDs. Comorbidity of an alcohol SUD and depression can double the risk of suicide, and this risk is even higher if there is also comorbid anxiety (Cornelius et al., 1995; Handley et al., 2016). Bipolar disorder is over three times more prevalent in our cohort, compared to the general Australian population and has a higher rate of suicide compared to major depressive disorder (Fisher et al.,

2007; Goldberg, 2001); BAD and comorbid SUDs can result in dangerous destabilisation of the disorder and further elevate an already increased risk of suicide (Goldberg, 2001).

Associations with Admission Length of Stay

Whilst people admitted for detoxification from cannabinoids had the shortest length of stay, they also had the greatest likelihood of discharging against medical advice. Interestingly, they also had the highest rate of psychiatric comorbidity, particularly depression (Horsfall et al., 2009). Whilst caution is needed when interpreting results for cannabinoid SUDs due to the low sample size, it may suggest that there is a proportion of cannabinoid users with severe psychiatric comorbidity that are either not able to properly access detoxification services or when they do, they are not having their needs adequately met. Their psychosocial factors may also be under-investigated. Conversely, people admitted for benzodiazepine use were among the least likely to discharge against medical advice and stayed the great length of time. Both people admitted for benzodiazepines and for cannabinoids were the most likely to be noncompliant with their prescribed medications. People being admitted for detoxification from these substances tended to have higher rates of depression, BAD and anxiety. Anxiety, particularly social anxiety, has been shown to complicate treatment response (Lai et al., 2015; Staiger et al., 2014). Likewise, depressive symptoms have been shown to complicate treatment response and engagement, and it has been shown that people with SUD and comorbid BAD have decreased rates of relapse when treated with antidepressants (Handley et al., 2016; Goldberg, 2001). If patients are either not receiving psychopharmacotherapy or not receiving adequate psychopharmacotherapy, symptoms of depression and anxiety, combined with withdrawal effects unique to each substance, may impact upon length of stay and discharges against medical advice. Identifying such patients and facilitating access to treatment may result in decreased length of stay for benzodiazepine patients and decreased rate of discharge against medical advice for cannabinoid patients, leading to both an increase in treatment outcomes for patients as well as a decrease in cost to the service. Decreasing cost to the service in this case would be particularly salient, given that benzodiazepine and cannabinoid patients comprise 3% of the patients, yet consume the greatest amount of resources and account for the largest proportion of discharges against medical advice.

Associations with Mental Health

The lack of association between psychiatric comorbidity, particularly depression, and likelihood to discharge against medical advice, treatment length or readmission was surprising. Whilst psychiatric comorbidity has been shown to negatively affect treatment outcomes, including early discharge, there are several studies that have shown that people in treatment for SUDs who have a comorbid psychiatric condition actually do better in treatment, compared to those with a SUD alone (Andersson et al., 2019; Castel et al., 2006; Goldberg, 2001). People who present to such facilities do so as they are more likely to have a severe substance use disorder and be motivated to seek help (Castel et al., 2006). Comorbid psychiatric conditions may not only make their phenomenological and symptomatologic experience worse, further motivating them to seek help, but may also provide social interaction and reinforcement which may be lacking in the community (Tate et al., 2011). Symptoms of depression and anxiety can result in social withdrawal, feelings of isolation and worthlessness and reduced access to human kindness, as well as, in some cases, a lack of food

and shelter (Tate et al., 2011). Inpatient treatment, in addition to treating their SUD, may provide them with sorely missed social interaction, intrinsic reward and structure to their life, as well as physical safety and emotional security. This, combined with appropriate psychopharmacotherapy and/or adequate psychological support, maximises their therapeutic outcomes. It has also been suggested that a better predictor of treatment completion is degree of psychological distress at intake, such as pre-treatment anxiety, fear and feelings of hopelessness, particularly in younger people from lower socioeconomic backgrounds with multiple comorbidities (Andersson et al., 2019; Castel et al., 2006). While there is no set protocol for attempting to keep patients engaged in drug and alcohol inpatient services in a voluntary setting, exploring individual factors that may contribute to early discharges can be explored. Framing admissions by involving the patient in early discussions surrounding possible exacerbation of mental health issues as a result of substance withdrawal and being in an unfamiliar setting may help to mitigate these exacerbations. Having readily-available cultural support for Aboriginal and Torres Strait Islander patients may also assist in preventing early discharges from this vulnerable sub-population, particularly since this sub-population has higher rates of discharges against medical advice (22%, compared with 17% of all admissions). Cultural barriers as fear of institutional racism, lack of Aboriginal cultural knowledge in non-Aboriginal health staff and separation from family members may compound pre-existing medical, psychiatric and social burdens and lead to increased discharges against medical advice (Hepworth et al, 2015).

Study Limitations

It is important to use caution when generalising these results beyond our particular cohort. Our patient catchment is characterised by a relatively lower socioeconomic status, compared to other catchments, and direct comparison may not be appropriate. Whilst every effort was undertaken to ensure accuracy of data collection, data acquisition was retrospective and relied on the accuracy of information from the patient and notation by the treating medical officer, and as such inherent bias may exist. Additionally, when comparing to other studies, it is important to be aware that the majority of studies have been undertaken in residential rehabilitation programs of varying lengths of stay, rather than acute inpatient detoxification centres. Further research from such acute detoxification facilities is needed, particularly focusing on a range of different substances as well as polysubstance use. Assessing depression, anxiety and stress of patients at intake with a validated psychological tool, such as the DASS-21, would allow assessment of current psychological state and allow a more rigorous assessment of the effect of mental health on discharge and length of stay. Other areas in need of further research include the complexities between BAD, SUDs and treatment modalities within detoxification and rehabilitation programs, as well as the effects of PTSD and detoxification outcomes, particularly in women.

Conclusion

The prevalence of psychiatric disorders within our cohort was substantially higher compared to the general Australian population, particularly depressive disorders, with more than half of our cohort reporting a depressive disorder, particularly women and those being treated for alcohol misuse. Whilst the presence of a psychiatric disorder itself did not predict any treatment outcomes, prescribed psychiatric medication non-compliance resulted

in shorter treatment stays and a greater likelihood to discharge against medical advice, as did those being treated for cannabinoid and opioid misuse. Although not predictive of treatment outcomes in this study, the high prevalence of psychiatric ill-health should not go ignored, with more than one third of those with a reported psychiatric disorder reporting suicidality. Additionally, disorders other than depressive disorders must also be given equal attention, with our cohort having higher rates of anxiety disorders, PTSD and bipolar affective disorders compared to the general population. It would be beneficial to extend the focus of research to a broader range of commonly presenting psychiatric disorders within the drug and alcohol treatment population, as well as to medication and treatment compliance. Similarly, follow-up interviews post-detoxification to verify prior comorbid psychiatric diagnoses would be beneficial, especially if previously diagnosed whilst the person was dependent on substances. Acute, short-term inpatient drug and alcohol facilities that concentrate on medical management, rather than longer-term rehabilitation programs, will also assist in the optimisation of treatment for both short- and long-term management of substance misuse.

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Declarations

Conflict of Interest The authors declare no competing interests.

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