TITLE PAGE

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Impact of substance use disorder on quality of inpatient mental health services for people with anxiety and depression.

Short Title:

Comorbid substance inpatient anxiety depression

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1 ABSTRACT

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3 **INTRODUCTION**: Substance Use Disorders (SUD) are commonly comorbid with anxiety and
4 depressive disorders, and are associated with poor treatment outcomes. The mechanisms
5 underlying this association remain unclear – one possibility is that patients with anxiety/ depressive
6 disorders and SUD receive poorer treatment. Concerns have been raised about the quality of
7 inpatient care received by patients with SUD.

8

9 **OBJECTIVES**: To examine the quality of care received by inpatients with an anxiety or depressive
10 disorder, comparing sub-groups with or without a comorbid SUD.

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12 **METHOD**: Retrospective case-note review of 3795 patients admitted to inpatient psychiatric wards
13 in England. Data were gathered on all acute admissions with anxiety/ depressive illness over a six
14 month period, for a number of measures of quality of care derived from national standards.
15 Association of co-existing SUD with a variety of quality of care outcomes (relating to assessment,
16 care planning, medication management, psychological therapies, discharge, crisis planning and
17 follow-up) was investigated using multivariable regression analyses.

18

19 **RESULTS**: 543 (14.3%) patients in the study had a secondary diagnosis of a SUD. Patients with SUD
20 were less likely to have had care plans that were developed jointly, i.e. with input from both patient
21 and clinician (OR = 0.76, 95% CI 0.55 to 0.93, P=0.034), and less likely to have had their medication
22 reviewed either during the admission (OR = 0.83, 95% CI 0.69 to 0.94, P=0.030) or at follow-up after
23 discharge (OR = 0.58, 95% CI 0.39 to 0.86, P=0.007). Carers of patients with SUD were less likely to
24 have been provided with information about available support services (OR = 0.79, 95% CI 0.57 to
25 0.98, P=0.047). Patients with SUD were less likely to have received adequate (at least 24 hours)
26 notice in advance of their discharge (OR = 0.72, 95% CI 0.54 to 0.96, P=0.033), as were their carers
27 (OR = 0.63, 95% CI 0.41 to 0.85, P=0.007). They were less likely to have a crisis plan in place at the
28 point of discharge (OR = 0.85, 95% CI 0.74 to 0.98, P=0.044). There was also strong evidence that
29 patients with SUD were less likely to have been referred for psychological therapy (OR = 0.69, 95% CI
30 0.55 to 0.87, P=0.002).

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32 **CONCLUSIONS**: We found evidence of poorer quality of care for inpatients with anxiety and
33 depressive disorders with comorbid SUD, highlighting the need for more to be done to support these
34 patients. Discrepancies in care quality may be contributing to the poor treatment outcomes
35 experienced by patients with SUD, and strategies to reduce this inequality are necessary to improve
36 the wellbeing of this substantial patient group.

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1 KEYWORDS

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3 Anxiety Disorders

4 Depressive Disorders

5 Comorbidity

6 Inpatient Services

7 Quality of Care

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1　INTRODUCTION

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3　Anxiety / stress-related disorders and unipolar depressive illness are among the leading causes of
4　disability worldwide (World Health Organisation, 2017). The prevalence of depression and anxiety
5　disorders are estimated at around 14% for adults in the UK (Public Health England, 2016), with
6　unipolar depression accounting for around 12% of admissions to psychiatric hospitals (Public Health
7　England, 2017). Substance use disorders (SUDs) are frequently comorbid with these conditions
8　(Grant, 1995; Jané-Llopis & Matytsina, 2006; Kessler et al., 2005, 1997; Virtanen et al., 2019). While
9　the strength of associations vary due to the broad range of diagnoses encompassed by these
10　categories, individuals who misuse substances are substantially more likely to suffer from
11　depression or almost any form of anxiety/ stress-related disorder (Virtanen et al., 2019).

12　Substance use is a well-known poor prognostic indicator when associated with anxiety disorders or
13　depression. Not only are SUDs associated with negative clinical outcomes (Deckert & Erhardt, 2019;
14　Hölzel et al., 2011; Sullivan et al., 2005) but the challenges involved in treating patients with this
15　comorbidity represent an additional cost to healthcare systems (Hoff & Rosenheck, 1999).
16　Depressed patients who use substances are substantially more likely to die by suicide than those
17　that do not (Hawton et al., 2013). This association has been judged to be sufficiently significant to
18　justify the inclusion of substance use as a 'red-flag' indicator for completed suicide in a variety of
19　psychiatric risk assessment tools (King et al., 2017; Runeson et al., 2017).

20　The factors underlying the detrimental effect of SUDs on clinical outcomes are unclear. The effects
21　of comorbid SUD may differ not only between anxiety vs depressive disorders, but also between the
22　various specific disorders within those categories. Several mechanisms have been proposed, mostly
23　relating to 'patient factors'- such as reciprocal causal effects between SUD and anxiety/depression
24　(Turner et al., 2018), or shared etiological factors such as genetic liability (Saraceno et al., 2009).
25　Patients with SUDs may also have difficulties engaging with treatment or maintaining adherence
26　with pharmacotherapy (Pompili et al., 2009, 2013).

27　However, there may also be deficits in the quality of care provided to these patients. Substance use
28　is associated with poor perceptions by healthcare professionals (Clarke et al., 2015; Ford et al., 2008;
29　Kelleher, 2007; van Boekel et al., 2013), and individuals with SUDs may receive substandard care for
30　other mental health problems (Watkins et al., 2001). For example, providers may be less likely to
31　recommend pharmacotherapy for depressive illness, even when such treatment is indicated (Brown
32　et al., 2000; Carey, 2018; Scott et al., 1998). These omissions have persisted despite some promising
33　signs that integrated treatment may be efficacious for SUDs and comorbid mental illness –
34　particularly depression, where suitable treatment may reduce both affective symptoms and
35　substance use (Babowitch & Antshel, 2016; Hesse, 2009).

36　We aimed to investigate whether the presence of a comorbid SUD affects the quality of care
37　received by inpatients with a primary diagnosis of an anxiety or depressive disorder. We conducted a
38　secondary analysis of data from a national audit of inpatient care for people with anxiety and
39　depression and examined the impact of comorbid SUD on a broad range of care quality indicators.
40　We hypothesised that patients with comorbid SUD may received poorer care. Such a finding would
41　implicate quality of care as a potential mediator of worse treatment outcomes experienced by
42　patients with SUD, and may identify interventions to address this inequality.

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METHODS

Setting and Participants

Data were collected as part of the National Clinical Audit of Anxiety and Depression in England. A detailed account of the methods used in the audit is available elsewhere (Royal College of Psychiatrists – College Centre for Quality Improvement, 2018). All National Health Service (NHS) Trusts (state-funded organisations providing public sector health services) in England with inpatient mental health services that provide care to adult patients with diagnoses of anxiety and/or depressive disorders were invited to take part. Some of these services also provide care to children, and where this was the case children aged 16 years or above were included in the analysis – however, services that provide care to children only were not invited to take part.

All participating organisations were asked to provide an anonymised list of eligible patients admitted to hospital between 01 April 2017 and 30 September 2017. Where patients had more than one admission during this sampling window, only the first admission was used. Patients were eligible for inclusion in the audit if they were aged 16 years or above, and had a primary diagnosis of an anxiety or depressive disorder at the point of discharge (ICD-10 coding). Patients were excluded if they had a primary diagnosis of any psychotic disorder (including F32.3 severe depressive episode with psychotic symptoms), bipolar affective disorder, cyclothymia or mania, or if they were admitted to a forensic service or long stay ward such as a rehabilitation service.

Data Collection

A total of fifty-four organisations providing mental health services took part in the audit. Staff from each organisation were asked to complete an online 'audit of practice' tool for each of their sampled patients, using data from clinical records only.

The data collection tool was based on guidance produced by the National Institute for Health and Care Excellence (NICE) for inpatient services (National Institute for Health and Care Excellence, 2011, 2011, 2016) and the 'Standards for Inpatient Mental Health Services' as defined by the Royal College of Psychiatrists' College Centre for Quality Improvement (Royal College of Psychiatrists, 2017); and was developed in collaboration with users and providers of psychiatric inpatient services, as well as representatives with lived experience of supporting patients. It included questions on patient demographics, details of admission (time/ date of admission/ discharge), diagnosis, assessment, care planning, medication, psychological therapies, physical health, discharge, re-admission, crisis planning and follow-up (see 'exposure, outcome measures and covariates). The tool was piloted by six volunteer Trusts prior to the main audit.

Five of each organisation's sampled patients were audited twice by two separate auditors, and the results compared by the audit team to determine inter-rater reliability. Levels of inter-rater agreement were generally high, with 30% of items having complete agreement, 39% having substantial agreement and 31% having moderate to low agreement. Following the pilot phase, some items with moderate or low agreement were removed from the full audit. In other instances information to guide those collecting data in the full audit was changed in an effort to improve reliability. The full report of inter-rater reliability for specific items is available online (Royal College

of Psychiatrists, 2019). Three organisations were also selected at random for quality assurance visits by an external clinician and member of the audit team to examine whether the submitted data were accurate.

The National Research Ethics Service and the Ethics and Confidentiality Committee of the National Information Governance Board advised that formal ethical approval/ written consent from participants was not required because this was an audit and patient identifiable data were not being collected. All procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Exposure, outcome measures and covariates

Patients were categorised according to whether they had a secondary diagnosis of any 'mental or behavioral disorder due to psychoactive substance use' (ICD codes F10-19). No information on specific sub-type of disorder or substance was gathered. Quality of clinical care was assessed using data from 24 questions, based on the 'Standards for Inpatient Mental Health Services' as defined by the Royal College of Psychiatrists' College Centre for Quality Improvement (Royal College of Psychiatrists, 2017).

These were:

1. Did the (initial) assessment include details about the service user's past response to treatment?
2. Did the (initial) assessment consider whether the service user had a history of trauma?
3. Was there a documented current BMI?
4. Was there a documented current smoking status?
5. Was the identified family member, friend or carer provided with information about available support services and/or a support plan? (where an appropriate family member, friend or carer had been identified)
6. Was the identified family member, friend or carer offered a carer's assessment? (where an appropriate family member, friend or carer had been identified)
7. Did the service user have a care plan?
8. Is there evidence that the care plan was jointly developed between the service user and clinician?
9. Was the service user given a copy of their care plan?
10. Was the service user referred to psychological therapy?
11. Did the service user commence psychological therapy before the end of the audit period? (only amongst those who had been referred)
12. Was the service user given at least 24 hours' notice of discharge?
13. Was the identified family member, friend or carer given at least 24 hours' notice of discharge? (where an appropriate family member, friend or carer had been identified)
14. Was the service user being prescribed psychotropic medication at the point of discharge?
15. Was the service user given verbal and/ or written information about their medication prior to discharge?
16. Did a review of the service user's medication(s) take place prior to discharge?

17. At discharge, was the service user given 'to take home' (TTO) medication?
18. Did the service user have a crisis plan at the point of discharge?
19. Was a discharge letter sent to the service user's GP within 24 hours?
20. Was a care plan sent to a nominated person in an accepting service? (where an appropriate service had been identified)
21. Did the service user receive follow-up within 48 hours of discharge?
22. Did a review of the service user's medication(s) take place between discharge and the end of the audit period?
23. Was an appropriately validated outcome measure completed?
24. Was the service user re-admitted to hospital between discharge and the end of the audit period?

A number of categorical variables were recorded as covariates – primary diagnosis (ie the specific anxiety or depressive disorder in each case), age, gender, ethnicity, employment status, accommodation status, length of admission and mode of admission (whether admitted voluntarily or involuntarily under the provisions of the UK Mental Health Act 1983).

Information was also recorded on which medications patients were prescribed, and these were categorised by class, i.e. antidepressant, anxiolytic (including benzodiazepine or other), antipsychotic, mood stabiliser.

Statistical Methods

All study analyses were conducted using SPSS (IBM Corp, 2017). We first calculated the proportion of patients who had a secondary diagnosis of SUD. The association of covariates (primary diagnosis, age, gender, ethnicity, employment/ accommodation status, mode of admission) with SUD, was investigated using univariate logistic regression. The association of SUD with each of the primary outcome measures (24 items listed above) was then measured using binomial logistic regression.

As patients were clustered within different services (NHS Trusts), and because quality of care for patients within a given service may be more similar than for patients in different services, all analyses were adjusted using multilevel logistic regression. Initially the association between SUD and each quality of care variable was examined without considering any confounding variables. The analysis was then repeated, adjusting for covariates found to be associated with the primary outcome measures (primary diagnosis, age, gender, ethnicity, employment/ accommodation status, mode of admission, and source organisation).

1 RESULTS

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3 Fifty-four NHS Trusts submitted data for the audit (all of those which were eligible). Data from 3795
4 patients' case notes were analysed, of which 543 (14.3%) had a secondary diagnosis of SUD.

5 Tables 1 summarises the demographic and clinical characteristics of patients with SUD compared to
6 those without. Reference groups were assigned as the most common data group for each variable.
7 Patients aged 25 to 34 years were significantly more likely than the reference group (age 45 to 54) to
8 have a diagnosis of SUD (OR = 1.38, 95% CI 1.02 to 1.88, P=0.037), while patients aged 65 to 74 years
9 were significantly less likely (OR = 0.19, 95% CI 0.07 to 0.48, P=0.001). Female patients compared to
10 male (OR = 0.50, 95% CI 0.40 to 0.62, P<0.001), and patients with an ethnicity classed as 'other'
11 compared to patients classed as 'white' (OR = 0.34, 95% CI 0.12 to 0.96, P=0.041) were less likely to
12 have a diagnosis of SUD. Meanwhile, homeless patients were more likely to have a diagnosis of SUD
13 compared to those in mainstream accommodation (OR = 1.89, 95% CI 1.33 to 2.70, P<0.001), and
14 both unemployed (OR = 1.93, 95% CI 1.29 to 2.50, P<0.001) and long-term sick (OR = 1.54, 95% CI
15 1.11 to 2.23, P=0.001) patients were more likely to have a diagnosis of SUD compared to those who
16 were employed. Patients with SUD were also less likely to be admitted to hospital involuntarily - i.e.
17 detained under the Mental Health Act 1983 (OR = 0.71, 95% CI 0.51 to 0.98, P=0.035) and had
18 significantly shorter admissions than those without SUD.

19 Table 2 summarises the multivariate regression analysis investigating the association of SUD with
20 primary diagnosis. Patients with SUD were less likely to have diagnoses of severe depressive
21 episodes (including in the context of recurrent depressive disorder), mixed anxiety and depression,
22 OCD or 'other stress-related' disorders.

23 Table 3 summarises the multivariate regression analyses investigating the association of SUD with
24 our primary outcome measures. There was evidence that patients with SUD were less likely to have
25 had care plans that were developed jointly, i.e. with input from patient and clinician (OR = 0.76, 95%
26 CI 0.55 to 0.93, P=0.034), and less likely to have had their medication reviewed either during the
27 admission (OR = 0.83, 95% CI 0.69 to 0.94, P=0.030) or at follow-up post-discharge (OR = 0.58, 95%
28 CI 0.39 to 0.86, P=0.007). Carers of patients with SUD (individuals who had been identified as holding
29 primary caring responsibilities) were less likely to have been provided with information about
30 available support services (OR = 0.79, 95% CI 0.57 to 0.98, P=0.047).

31 Patients with SUD were less likely to have received adequate (at least 24 hours) notice in advance of
32 their discharge (OR = 0.72, 95% CI 0.54 to 0.96, P=0.033), as were their carers (OR = 0.63, 95% CI
33 0.41 to 0.85, P=0.007). They were less likely to have a crisis plan in place at the point of discharge
34 (OR = 0.85, 95% CI 0.74 to 0.98, P=0.044). There was also strong evidence that patients with SUD
35 were less likely to have been referred for psychological therapy during their admission (OR = 0.69,
36 95% CI 0.55 to 0.87, P=0.002). Patients with SUD were more likely to have had their smoking status
37 recorded (OR = 1.44, 95% CI 1.15 to 1.79, P=0.031).

38 Univariate analysis suggested that amongst those patients referred for psychological therapy,
39 patients with SUD were less likely to have commenced their therapy prior to the end of the audit
40 period (6 months following the date of admission), but this association did not persist after
41 adjustment for demographic and clinical factors (primary diagnosis, age, gender, ethnicity,
42 employment/ accommodation status, mode of admission, and source organisation).

43 Table 4 summarises the multivariate regression analyses investigating the association of SUD with
44 the prescription of various classes of psychotropic medication. Univariate analysis suggested that

patients with SUD were less likely to be prescribed all classes of medication than those without. However, after adjustment for demographic and clinical factors only the association with mood stabilisers persisted (OR = 0.47, 95% CI 0.26 to 0.86, P=0.015).

DISCUSSION

The findings from this study suggest that the quality of inpatient care for anxiety and depression provided to patients with co-occurring SUD differs from that provided to patients without this comorbidity. Differences were evident across multiple stages of inpatient admission (including the initial assessment process, care planning, treatments offered, and discharge planning). These variations in care were independent of demographic variation, and are therefore not a product of demographic differences between patients with SUD and those without – although there are significant demographic differences between these groups.

On most standards where there were differences, patients with co-occurring SUD received lower quality care than those without. The magnitude of these differences varied with different aspects of clinical care, as described above. The only exception to this – unsurprisingly – was a variable specifically relating to substance use in the initial assessment process (patients with SUD were more likely to have their smoking status recorded).

Strengths and limitations

Data were obtained from a large heterogenous sample, derived from every NHS Trust providing acute psychiatric inpatient care for patients with anxiety and depression in England. We expect that our findings would be generalisable to similar patient groups in wider inpatient clinical practice. The primary outcome measures we used to assess quality of clinical care were based on NICE guidance (National Institute for Health and Care Excellence, 2011, 2011, 2016) and standards for inpatient services published by the Royal College of Psychiatrists (Royal College of Psychiatrists, 2017), and were refined with feedback from an expert group of service users and providers. To date, there have been no other studies specifically examining inpatient care for anxiety and depression, for patients with comorbid SUD.

There are important limitations. Restricting the sample to patients with a primary diagnosis of an anxiety disorder or depressive illness does mean that the results may not be generalisable to other patient groups such as those with other primary diagnoses, or those who were admitted to hospital because of behavior or symptoms related to their SUD alone. However, restricting the sample to a specific cohort in this way also allowed us to mitigate the potentially confounding effects of a more diverse range of primary diagnoses.

The number of primary outcome measures (care quality items) necessitated multiple statistical analyses, which increases the potential risk of type 1 statistical errors. Also, data were produced from a retrospective case note audit, and are therefore dependant on accurate reporting and documentation of events at the time of occurrence. Case notes were written by clinicians, and may

1   not fully capture patient/ carer perspectives or experience (e.g. whether they were given sufficient
2   information about medication or services available etc).

3   Implications
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5   We found evidence that quality of care in patients with anxiety or depression who were admitted to
6   psychiatric inpatient services varies between those with or without a comorbid SUD, the majority of
7   differences suggesting shortfalls in care for patients with comorbidity, and their carers.

8   These findings accord with existing observations that patients with SUD receive poor general
9   medical care compared to patients without this comorbidity, despite similar or more frequent
10 contact with medical services (Mitchell et al., 2009). Research focussing specifically on inpatient
11 psychiatric care is lacking - to date, most studies in this context have examined detection and
12 treatment of substance problems themselves, rather than treatment of comorbid mental disorders
13 or general quality of care (Baker et al., 2002; Long & Hollin, 2009; Martino et al., 2019; Prochaska et
14 al., 2005).

15 Clinicians may unintentionally focus on symptoms relating to substances or even misattribute
16 unrelated symptoms to substance use (an effect referred to as 'diagnostic overshadowing'), which
17 may create barriers to communication, assessment and treatment (Sher, 2006). Our study may
18 provide some evidence for this effect –patients with SUD were significantly less likely to be
19 diagnosed with 'severe' depressive episodes, had shorter admissions and were less likely to be
20 detained under the Mental Health Act. These findings are consistent with previous studies (Huntley
21 et al., 1998; Sinclair et al., 2008), and may be related to 'diagnostic overshadowing' – although
22 patients with co-morbid SUD may genuinely have less serious psychiatric illnesses. These factors
23 were corrected for in the subsequent analysis so do not explain the variance in quality of care.

24 The mechanisms by which comorbid SUD impacts quality of care are unclear. However, our study
25 identified specific areas where inpatient care for patients with comorbid SUD could be improved.
26 The first area is collaborative decision-making - patients with SUD were less likely to have had input
27 in developing their care plans, their carers were less likely to be advised about support services
28 available, and both patients and their carers were less likely to receive adequate notice in advance of
29 their discharge date.

30 Difficulties in establishing therapeutic alliances between healthcare professionals and patients with
31 SUD are common (Palmer et al., 2009). Clinicians have been found to hold punitive and negative
32 attitudes towards patients with SUD (Barry et al., 2002; Howard & Chung, 2000), perceiving 'patient
33 factors' such as aggression, manipulation and poor motivation as barriers to effective treatment
34 (Thornicroft et al., 2007). Patients with SUD are over-represented amongst those whose admissions
35 are felt to be 'inappropriate' (Bartlett et al., 1999).

36 Some of the reasons underlying these negative attitudes are clear - substance use is associated with
37 violence, self-harm, and treatment non-adherence (Barlow et al., 2000; Brown et al., 2019; Johns,
38 1997), behaviors which can be disruptive and difficult to manage in an inpatient environment.
39 Health professionals report lacking adequate education, training and support structures to
40 effectively engage with this patient group (van Boekel et al., 2013), and resent feeling forced to
41 adopt a 'policing' role in an attempt to control patient substance use (Dolan & Kirwan, 2001).

42 To date, there has been limited research evaluating the consequences of health professionals'
43 negative attitudes towards patients with SUD. There is some evidence that health professionals may

1 adopt a more 'task-oriented' approach in the delivery of healthcare to patients with SUD – leading to
2 suboptimal practices such as shorter contacts, showing less empathy and demonstrating diminished
3 personal engagement (Peckover & Chidlaw, 2007). This effect may explain the failure to involve
4 patients and their carers in important aspects of their care, identified by our study.

5 Effective therapeutic relationships are known to be key determinants in the success or failure of
6 treatment strategies for patients with SUD (Miller & Rose, 2009). Negative attitudes by health
7 professionals detract from patients' sense of empowerment and self-efficacy, and may lead to worse
8 treatment outcomes (Luoma et al., 2007; Schomerus et al., 2011). Our findings of deficiencies in
9 collaborative discharge planning and lack of crisis plans at the point of discharge are particularly
10 concerning, in light of the fact that substance abuse significantly increases risk of premature all-
11 cause mortality following discharge from psychiatric hospital (Walter et al., 2017).

12 Training and support for clinicians and health service providers may help reduce inadvertent
13 discrimination and improve care for this population. Several studies have described the positive
14 effects of targeted education to improve the knowledge and skills of professionals working with
15 patients with SUD (Ding et al., 2005; V. Howard & Holmshaw, 2010). Other organisational support
16 systems such as supervision and opportunities to consult with experts have also been shown to
17 enhance knowledge and confidence amongst health professionals, contributing significantly to an
18 increased willingness to engage in collaborative care with these patients (Albery et al., 2003; Ford et
19 al., 2008). This is particularly relevant in the context of significant cuts to specialist addiction services
20 and training programmes in the NHS over the last 10 years (Drummond, 2017; Mohammadi, 2014).

21 Another area requiring improvement identified in this study is access to treatment. Patients with
22 SUD were less likely to have had their medication reviewed either during the admission or at follow-
23 up post-discharge, and were less likely to be referred for psychological therapy.

24 Although there are some situations where substance use may preclude effective engagement with
25 treatment (Perry et al., 1983), these findings suggest that patients with SUD may again be vulnerable
26 to 'diagnostic overshadowing'. Clinicians may be less likely to recommend treatments even where
27 they are indicated (eg for depressive symptoms), often citing concerns about confusing substance-
28 induced symptoms with primary disorders (Weiss et al., 1998), and opting instead to direct patients
29 to interventions for their SUD (Brown et al., 2000; Carey, 2018; Scott et al., 1998).

30 However, guidelines from the Department of Health for England and Wales on the management of
31 patients with mental illness and co-morbid SUD stress the importance of comprehensive assessment
32 and management of both aspects of a patient's presentation (Department of Health, 2017). There is
33 good evidence for the efficacy of treatments such as antidepressant medication (Cornelius et al.,
34 1997; McGrath et al., 1996; Nunes et al., 1998; Roy-Byrne et al., 2000) and psychological
35 interventions (Hesse, 2009) for depression and anxiety even in the presence of comorbid substance
36 use. Ideally, this is given concurrently with treatments targeting the substance problems specifically,
37 rather than either in isolation, but in some cases treatment of primary disorders alone may reduce
38 substance use (Nunes & Levin, 2004). Likewise, current British Association of Psychopharmacology
39 guidelines for treatment of co-morbid substance use in psychiatric patients highlight the need to
40 treat both disorders concurrently (Lingford-Hughes et al., 2004)

41 More research is needed to explore how quality of care impacts treatment outcomes for patients
42 with SUD who receive inpatient treatment for anxiety and depression. It would also be helpful to
43 explore in detail how staff attitudes towards this patient group relate to quality of care. This may be
44 best achieved through longitudinal study designs that combine assessment of health professionals'

attitudes with objective measures of quality of care and treatment outcomes, as well as patients' perceptions of the treatment and collaboration between professionals and patients.

While variation in care between patients with SUD and those without is significant, it is also important to note that the quality of care received by patients overall (irrespective of comorbidity) fell below nationally agreed standards. For example, only half of patients received a follow-up within 48 hours of discharge, or had a discharge letter sent to their GP within 24 hours, while only a quarter of carers were offered a care needs assessment.

Conclusions

This study provides data on whether the quality of inpatient care patients receive for anxiety and depression differs if they have a dual diagnosis of substance use disorder.

We found that there are significant differences in quality of care between those patients with comorbid SUD and those without. Most of these differences represent worse quality of care for patients with SUD. We are unable to infer a causal relationship between comorbid SUD and quality of care. However, this association merits further research into the factors obstructing good quality of care for patients with SUD, and how these can be addressed.

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DISCLOSURES

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DATA AVAILABILITY

All authors had access to the full study dataset. The dataset is held by the NCAAD team at the RCPsych Centre for Quality Improvement and could be made available on request.

1 Table 1

2

Table 1 Analysis of demographic / clinical factors (independent variables) associated with substance disorder (dependant variable)						
	Substance Disorder N (% of row)	No Substance Disorder N (% of row)	Unadjusted OR (95% CI)	P	Adjusted[a] OR (95% CI)	P
Age n=3795						
<18	4 (4.2)	91 (95.8)	0.20 (0.07 to 0.56)	0.002	0.28 (0.07 to 1.10)	0.068
18 to 24	51 (12.5)	356 (87.5)	0.66 (0.46 to 0.94)	0.020	0.67 (0.43 to 1.04)	0.076
25 to 34	150 (21.8)	537 (78.2)	1.28 (0.99 to 1.67)	0.063	1.38 (1.02 to 1.88)	0.037
35 to 44	123 (20.1)	489 (79.9)	1.16 (0.88 to 1.52)	0.301	1.18 (0.86 to 1.63)	0.313
45 to 54	127 (17.9)	584 (82.1)	Ref		Ref	
55 to 64	56 (11.1)	448 (88.9)	0.58 (0.41 to 0.81)	0.001	0.74 (0.50 to 1.10)	0.135
65 to 74	23 (5.5)	397 (94.5)	0.27 (0.17 to 0.42)	<0.001	0.39 (0.19 to 0.83)	0.015
75+	9 (2.5)	350 (97.5)	0.12 (0.06 to 0.24)	<0.001	0.19 (0.07 to 0.48)	0.001
Gender n=3789						
Male	379 (19.5)	1565 (80.5)	Ref		Ref	
Female	164 (8.9)	1681 (91.1)	0.40 (0.33 to 0.49)	<0.001	0.50 (0.40 to 0.62)	<0.001
Ethnicity n=3565						
White	457 (14.3)	2737 (85.7)	Ref		Ref	
Black	8 (9.9)	73 (90.1)	0.66 (0.31 to 1.37)	0.263	0.46 (0.20 to 1.03)	0.059
Asian	22 (14.5)	130 (85.5)	1.01 (0.64 to 1.61)	0.955	0.70 (0.41 to 1.18)	0.179
Mixed	9 (13.0)	60 (87.0)	0.90 (0.44 to 1.82)	0.767	0.78 (0.36 to 1.69)	0.523
Other	4 (5.8)	65 (94.2)	0.37 (0.13 to 1.02)	0.054	0.34 (0.12 to 0.96)	0.041
Employment n=3305						
Employed	107 (12.4)	753 (87.6)	Ref		Ref	
Unemployed	189	662	2.00	<0.001	1.93	<0.001

				P		P
	(22.2)	(77.8)	(1.55 to 2.60)		(1.39 to 2.50)	
Long-term sick	124 (18.6)	541 (81.4)	1.61 (1.22 to 2.14)	<0.001	1.54 (1.11 to 2.23)	0.001
Retired	37 (4.8)	735 (95.2)	0.35 (0.24 to 0.52)	<0.001	0.87 (0.14 to 1.48)	0.351
Student	11 (7.0)	146 (93.0)	0.53 (0.28 to 1.01)	0.054	0.93 (0.11 to 1.79)	0.725
Accommodation n=3508						
Mainstream	381 (13.0)	2555 (87.0)	Ref		Ref	
Supported	26 (14.0)	160 (86.0)	1.09 (0.71 to 1.67)	0.694	1.25 (0.77 to 2.03)	0.364
Homeless	79 (35.4)	144 (64.6)	3.68 (2.74 to 4.94)	<0.001	1.89 (1.33 to 2.70)	<0.001
Other	29 (17.8)	134 (82.2)	1.45 (0.96 to 2.20)	0.079	1.39 (0.87 to 2.22)	0.173
Detention Status n = 3795						
Voluntary	479 (15.1)	2686 (84.9)	Ref		Ref	
Involuntary	64 (10.2)	566 (89.8)	0.63 (0.48 to 0.84)	0.001	0.71 (0.51 to 0.98)	0.035
	Substance Disorder Mean Median STD	No Substance Disorder Mean Median STD	Unadjusted B coefficient 95% CI	P	Adjusted[a] B coefficient 95% CI	P
Wait time for bed n=2207	20.31 hours 5.30 hours 52.72 hours	34.68 hours 5.44 hours 70.96 hours	-14.37 hours - 32.53 to 3.79 hours	0.121	-4.25 hours - 20.00 to 11.50 hours	0.597
Length of admission n=3795	17.14 days 10.00 days 26.11 days	27.95 days 14.00 days 41.45 days	- 10.81 days - 14.62 to -7.00 days	<0.001	-7.20 days - 11.49 to -2.91 days	0.001

a. Adjusted for NHS trust, age, gender, ethnicity, employment, accommodation, detention status, length of admission and primary/ secondary diagnosis.

1   Table 2

2

Table 2 – association of primary diagnosis (independent variable) with substance use disorder (dependant variable).						
Primary outcome	Substance disorder N (% of row)	No substance disorder N (% of row)	OR 95% CI	P	Adjusted[a] OR 95% CI	P
Depressive episode - mild	20 (19.6)	82 (80.4)	Ref		Ref	
Depressive episode - mod	71 (15.6)	384 (84.4)	0.76 (0.44 to 1.32)	0.324	0.79 (0.42 to 1.46)	0.442
Depressive episode - severe	31 (8.4)	338 (91.6)	0.38 (0.20 to 0.69)	0.002	0.41 (0.22 to 0.81)	0.031
Depressive episode - other	60 (16.5)	303 (83.5)	0.81 (0.46 to 1.42)	0.467	0.87 (0.46 to 1.63)	0.658
Recurrent DD[b] - mild	7 (10.6)	59 (89.4)	0.49 (0.19 to 1.23)	0.126	0.60 (0.20 to 1.78)	0.354
Recurrent DD - mod	39 (17.5)	184 (82.5)	0.87 (0.48 to 1.58)	0.646	1.03 (0.53 to 2.00)	0.933
Recurrent DD - severe	16 (8.2)	179 (91.8)	0.37 (0.18 to 0.74)	0.005	0.44 (0.19 to 0.87)	0.035
Recurrent DD - other	13 (10.2)	115 (89.8)	0.46 (0.22 to 0.98)	0.045	0.68 (0.30 to 1.55)	0.353
Other affective	8 (17.8)	37 (82.2)	0.87 (0.36 to 2.20)	0.795	0.89 (0.34 to 2.35)	0.812
Phobia	4 (23.5)	13 (76.5)	1.26 (0.37 to 4.28)	0.710	1.19 (0.31 to 1.17)	0.797
Mixed anxiety / depression	48 (11.5)	369 (88.5)	0.53 (0.30 to 0.95)	0.032	0.51 (0.27 to 0.97)	0.044
Other anxiety	32 (11.7)	242 (88.3)	0.54 (0.29 to 1.00)	0.050	0.55 (0.27 to 1.11)	0.097
OCD[c]	5 (5.4)	88 (94.6)	0.23 (0.08 to 0.65)	0.005	0.18 (0.06 to 0.52)	0.002
PTSD[d]	36 (19.9)	145 (80.1)	1.02 (0.55 to 1.87)	0.954	0.69 (0.34 to 1.41)	0.309
Adjustment	117 (19.6)	479 (80.4)	1.00 (0.59 to 1.70)	0.996	0.86 (0.48 to 1.56)	0.617
Other stress-related	36 (13.3)	235 (86.7)	0.63 (0.34 to 1.15)	0.130	0.48 (0.24 to 0.94)	0.033

3

4   a. Adjusted for NHS trust, age, gender, ethnicity, employment, accommodation, detention
5   status, length of admission and primary/ secondary diagnosis.
6   b. DD = depressive disorder

c. OCD = Obsessive-compulsive disorder
d. PTSD = Post-traumatic stress disorder

1   Table 3
2
3

Table 3 – association of substance use disorder (independent variable) with quality of care measures (dependant variables).						
Primary outcome	Substance disorder N / total (%)	No substance disorder N / total (%)	OR 95% CI	P	Adjusted[a] OR 95% CI	P
Assessment included trauma?	389/484 (80.4)	2226/2846 (78.2)	1.14 (0.90 to 1.45)	0.285	1.14 (0.86 to 1.52)	0.362
Assessment included past treatment?	368/471 (78.1)	2308/2816 (82.0)	0.79 (0.61 to 0.99)	0.048	0.92 (0.69 to 1.24)	0.158
BMI[b] recorded	396/543 (72.9)	2330/3252 (71.6)	1.07 (0.87 to 1.31)	0.539	1.13 (0.89 to 1.43)	0.332
Smoking status recorded	470/543 (86.6)	2685/3252 (82.6)	1.36 (1.05 to 1.77)	0.021	1.44 (1.15 to 1.79)	0.031
Care plan completed	493/543 (90.8)	2952/3251 (90.8)	1.00 (0.73 to 1.37)	0.993	1.29 (0.91 to 1.67)	0.133
Care plan developed jointly	389/493 (78.9)	2437/2952 (82.6)	0.79 (0.62 to 1.00)	0.051	0.76 (0.55 to 0.93)	0.034
Patient received copy of care plan	277/493 (56.2)	1656/2952 (56.1)	1.00 (0.83 to 1.22)	0.971	1.04 (0.83 to 1.30)	0.738
Carer provided info re: support services available	155/279 (55.6)	1303/2060 (63.3)	0.73 (0.56 to 0.93)	0.013	0.79 (0.57 to 0.98)	0.047
Carer offered care needs assessment	71/279 (25.4)	508/2060 (24.7)	1.04 (0.78 to 1.39)	0.775	1.15 (0.86 to 1.47)	0.288
Crisis plan in place at discharge	336/502 (66.9)	2091/2798 (74.7)	0.83 (0.67 to 1.03)	0.058	0.85 (0.74 to 0.98)	0.044
Prescribed medication at discharge?	465/543 (85.6)	2852/3252 (87.7)	0.84 (0.64 to 1.09)	0.180	0.94 (0.71 to 1.20)	0.516
Medication reviewed during admission?	390/464 (84.1)	2471/2821 (87.6)	0.75 (0.57 to 0.98)	0.035	0.83 (0.69 to 0.94)	0.030
Patient given info re: medication?	336/465 (72.3)	2080/2852 (72.9)	0.97 (0.78 to 1.20)	0.762	1.09 (0.85 to 1.42)	0.483

TTA[c] medication provided at discharge?	377/457 (82.5)	2170/2554 (85.0)	0.83 (0.64 to 1.09)	0.178	0.96 (0.76 to 1.22)	0.824
Medication reviewed after discharge?	231/281 (82.2)	1457/1670 (87.2)	0.67 (0.48 to 0.95)	0.022	0.58 (0.39 to 0.86)	0.007
Referred to psychology?	164/543 (30.2)	1209/3251 (37.2)	0.73 (0.60 to 0.89)	0.002	0.69 (0.55 to 0.87)	0.002
Commenced psychology?	77/140 (55.0)	695/1061 (65.5)	0.64 (0.45 to 0.92)	0.015	0.97 (0.69 to 1.45)	0.578
Outcome measure completed	324/543 (59.7)	1990/3252 (61.2)	0.94 (0.78 to 1.13)	0.500	1.05 (0.85 to 1.31)	0.645
Readmission within audit period	63/502 (12.5)	349/2799 (12.5)	1.01 (0.76 to 1.34)	0.960	0.83 (0.58 to 1.17)	0.286
Patient given notice of discharge	354/502 (70.5)	2192/2799 (78.3)	0.66 (0.54 to 0.82)	<0.001	0.72 (0.54 to 0.96)	0.033
Carer given notice of discharge	147/251 (58.6)	1254/1760 (71.3)	0.57 (0.44 to 0.75)	<0.001	0.63 (0.41 to 0.85)	0.007
Discharge letter sent to GP[d] within 48 hours	222/429 (51.7)	1261/2404 (52.5)	0.97 (0.79 to 1.19)	0.787	1.10 (0.87 to 1.40)	0.428
Copy of care plan sent to accepting service	245/320 (76.6)	1281/1710 (74.9)	1.09 (0.83 to 1.45)	0.531	1.29 (0.96 to 1.56)	0.081
Follow-up within 48 hours of discharge	242/438 (55.3)	1310/2388 (54.9)	1.02 (0/83 to 1.25)	0.879	1.00 (0.79 to 1.27)	0.996

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2 a. Adjusted for NHS trust, age, gender, ethnicity, employment, accommodation, detention
3   status, length of admission and primary/ secondary diagnosis.
4 b. BMI = Body Mass Index
5 c. TTA = 'To Take Away'
6 d. GP = General Practitioner (ie primary care physician)
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1 Table 4

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Table 4 – association of substance use disorder (independent variable) with medication prescribed (dependant variables).						
Medication	Substance disorder N / total (%)	No substance disorder N / total (%)	OR 95% CI	P	Adjusted[a] OR 95% CI	P
Antidepressant	405/543 (74.6)	2559/3252 (78.7)	0.80 (0.64 to 0.98)	0.032	1.02 (0.79 to 1.31)	0.902
Anxiolytic	138/543 (25.4)	961/3252 (29.6)	0.81 (0.66 to 0.99)	0.049	0.92 (0.72 to 1.17)	0.480
Benzodiazepine	57/543 (10.5)	442/3252 (13.6)	0.75 (0.56 to 0.99)	0.048	0.83 (0.59 to 1.17)	0.284
Antipsychotic	160/543 (29.5)	1101/3252 (33.9)	0.82 (0.67 to 0.99)	0.044	0.87 (0.69 to 1.10)	0.238
Mood Stabiliser	17/543 (3.1)	225/3252 (6.9)	0.44 (0.26 to 0.72)	0.001	0.47 (0.26 to 0.86)	0.015

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5   a. Adjusted for NHS trust, age, gender, ethnicity, employment status, primary/ secondary
6   diagnosis.

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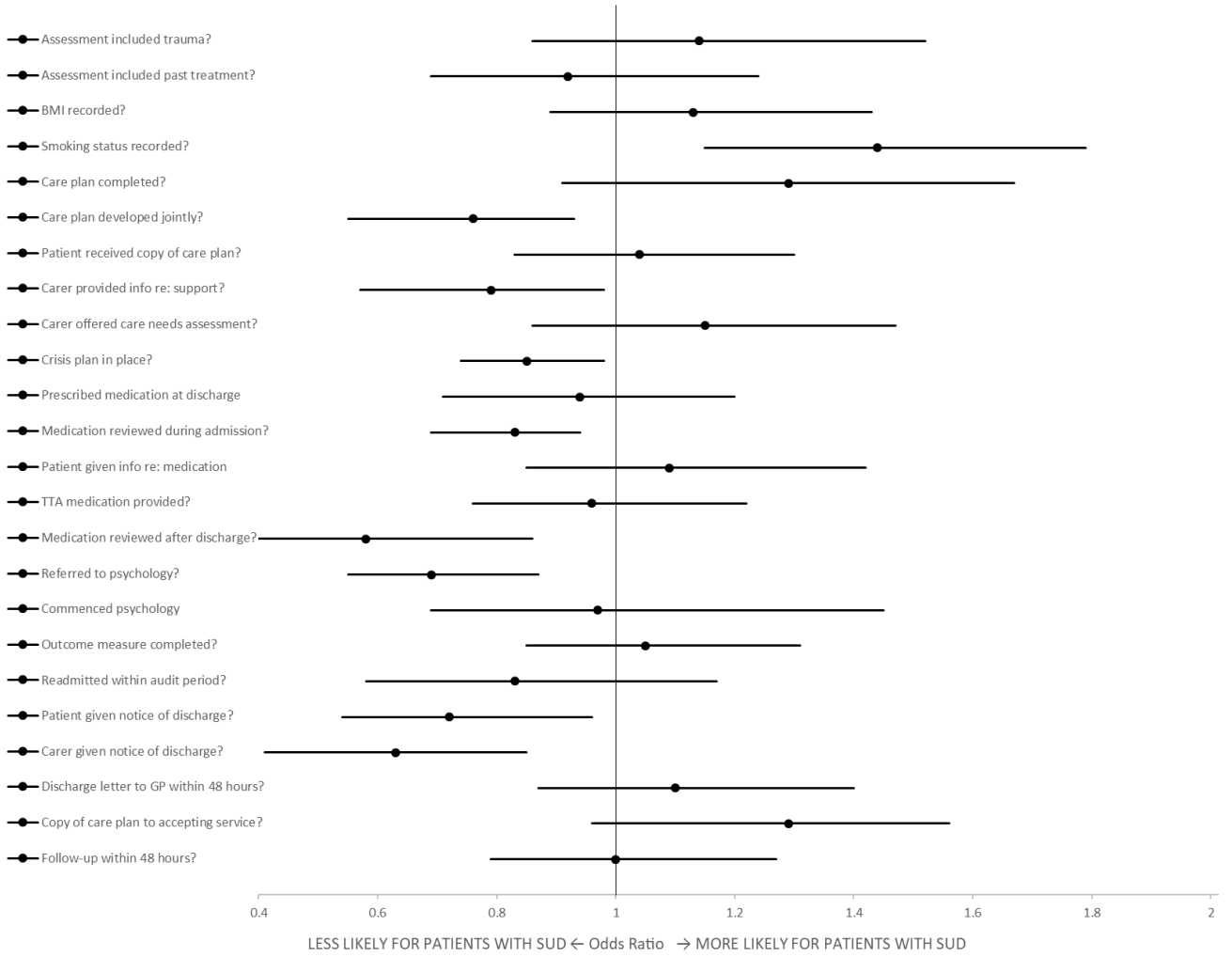
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1   Figure 1

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3   Forest plot of association of co-existing SUD with quality of care measures.

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