Clinician identification of elevated symptoms of depression among individuals seeking treatment for substance misuse

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\textbf{ABSTRACT}

\textbf{Background:} Depression is common among those experiencing alcohol and other drug (AOD) disorders. It has been suggested that identifying depressive symptoms among this group is important for case management. Despite this, there is a lack of research examining how well clinicians perform this task within this setting.

\textbf{Aims:} To determine the: (i) accuracy of clinician identified elevated symptoms of depression among clients seeking treatment for AOD misuse as compared to a standardized self-report psychiatric screening tool; and (ii) clinician and client characteristics associated with accurate identification of elevated symptoms of depression.

\textbf{Methods:} The study used a descriptive cohort design. Participants from two Australian AOD outpatient clinics reported demographic data and completed the Patient Health Questionnaire (PHQ-9) to identify elevated symptoms of depression. Clinicians were asked to indicate the presence or absence of depression for individual clients. Client and clinician data were compared.

\textbf{Results:} Sensitivity of clinician identified elevated symptoms of depression, compared with the PHQ-9, was moderate at 73.0\% (95\% CI = 63.7, 81.0) and specificity was low with 49.5\% (95\% CI = 39.9, 61.2) accurately identified as not having elevated symptoms of depression. AOD clinicians’ years’ of experience, clients’ main substance and length of treatment were associated with accuracy of identification.

\textbf{Conclusion:} Clinicians identify elevated symptoms of depression with moderate accuracy amongst individuals with AOD disorders. There is a tendency to over-identify which may contribute to inaccuracies. Routine screening may assist in improving identification of depressive symptoms and place greater focus on mental health comorbidities.

1. Introduction

1.1. Depression is common among those with an AOD disorder

The lifetime rate of depression among those with alcohol or other drug (AOD) disorders is high. A recent meta-analysis of population-based epidemiological surveys found depression is 3–4 times more likely to occur in those with an AOD disorder compared with those without (Lai et al., 2015). Individuals experiencing depression as well as an AOD disorder experience greater: intensity of depressive symptoms, functional impairment and number of suicide attempts compared to either condition alone (Davis et al., 2006; Johnston et al., 2009; Teesson et al., 2009). Within AOD treatment services mental health conditions are typically over-represented compared to the general population (Teesson and Proudfoot, 2003), with a recent meta-analysis estimating the prevalence of depression to be 27–85\% in AOD treatment settings (Kingston et al., 2016).

1.2. Identifying depression is important within AOD treatment settings

It has been suggested that co-occurring mental health conditions among those seeking treatment for AOD disorders should be considered the rule, rather than the exception (Marel et al., 2016). Early identification and diagnosis of mental health conditions has been shown to improve treatment outcomes, improve prognosis and allow for more comprehensive treatment (Berk et al., 2010; Chan et al., 2008; Myrick and Brady, 2003; Stafford et al., 2013). Furthermore, depression contributes to poor quality of life (IsHak et al., 2011) and has an adverse
impact on AOD treatment (Davis et al., 2008). Therefore, clinical consensus guidelines for treating comorbid mental health conditions within AOD treatment settings state that clinicians should seek to identify symptoms of mental health conditions, such as depression, so these symptoms can be considered for case and treatment formulation (Marel et al., 2016). These guidelines specify that even when an individual seeking AOD treatment does not meet a formal criteria for depression, acknowledging and managing elevated symptoms should still be considered an important aspect of treatment (Marel et al., 2016).

1.3. Research examining clinician accuracy in identifying depression in AOD treatment settings is limited

Despite the importance of identifying elevated symptoms of depression within AOD treatment settings, it has been reported that mental health conditions commonly go unnoticed by AOD clinicians (Marel et al., 2016; Proudfoot et al., 2003). This is likely due to a variety of challenges within this setting, including a pressure to treat the primary condition (i.e., the substance misuse), a lack of training in detecting and treating comorbidity, and a general lack of assessment to identify these conditions (Proudfoot et al., 2003). While several brief measures have been developed to allow for simple and efficient depression screening (Moses, 2015), the adoption of these tools into a practice setting is an ongoing challenge for implementation scientists (Unutzer and Park, 2012). As signs and symptoms of mental health conditions, such as depression, are not easily identified, a lack of assessment is likely to lead to these conditions being overlooked. It is therefore important to examine how well clinicians perform this task within AOD settings.

A study by McMillan et al. performed an independent mental health assessment of several psychiatric conditions among individuals attending alcohol treatment (McMillan et al., 2008). When comparing this to charts maintained by the AOD treatment centres, they found only 31.6% of depression cases were accurately identified in the medical record. However, this study sample was restricted to those legally mandated to alcohol treatment after being convicted of driving under the influence and is therefore not representative of all individuals attending AOD treatment. The rate at which clinicians in an AOD setting can identify depressive symptoms is important as it will likely impact the course of treatment (Marel et al., 2016). To the authors’ knowledge, no research has examined how well clinicians in AOD treatment centres identify depression among a general sample of clients using AOD nor the characteristics associated with accurate identification. Previous research has demonstrated that some demographic and treatment characteristics are associated with lower rates of identification within other treatment settings (Carey et al., 2015; Hobden et al., 2016). Examining whether these biases exist within an AOD setting will help identify demographic subgroups who are at greater risk of under-identification and assist with strategies to improve care for these groups.

Therefore, the aims of this research were to determine, among a sample of treatment seeking AOD outpatients, the:

1. Accuracy (sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV)) of clinician identified elevated symptoms of depression among clients seeking treatment for substance abuse as compared to a standardized self-report psychiatric screening tool; and
2. Clinician and client characteristics associated with accurate identification of elevated symptoms of depression.

2. Method

2.1. Design

The study design was a descriptive cohort study.

2.2. Setting

Two drug and alcohol outpatient clinics.

2.3. Recruitment of clinics

Convenience sampling was used to recruit clinics from two Australian states. Clinic directors were approached and provided with information about the research. One clinic was located within a large public hospital and the other was a community centre.

2.4. Eligibility and recruitment of clinicians

Clinicians were eligible if they were providing treatment at participating clinics. A member of the research team (BH) provided information about the study to clinicians during a team meeting. Clinicians were provided with an information statement and consent form to provide consent to participate.

2.5. Eligibility and recruitment of clients

Clients were eligible to participate if they were: (i) aged 18 years or older; (ii) attending a participating outpatient clinic; and (iii) proficient in English. Clinic reception staff made subjective judgements on whether the client was ineligible due to being: (i) too ill; (ii) distressed; (iii) under the influence of drugs or alcohol; or (iv) otherwise unable to provide informed consent. When presenting for their appointment at the clinic, clients were approached by clinic reception staff and verbally invited to take part in the study. Interested clients were provided with a computer tablet (iPad) and a copy of the study information statement.

2.6. Client data collection

Clients who initiated the computer tablet survey were provided with an onscreen overview of the study and then asked to provide consent to participate. For those who consented, the survey questions followed. Participants could return to complete the survey after their appointment if they were called in before completing. Clients completed the following measures:

2.6.1. Demographic and Clinical Characteristics

Clients completed questions on their gender, age, education, ethnicity, private insurance, concession card, relationship status, who they lived with and employment status. Clients reported the main substance they were seeking treatment for. Substances included: alcohol, cannabis, amphetamines, nicotine, heroin, benzodiazepines or methamphetamine. Clients also reported whether they were attending for a new episode of treatment and, if not, how far in to treatment they were. A new episode of treatment was defined as: “This is the first time you have ever attended treatment at a drug and alcohol clinic; OR This is the first time you have attended treatment at this clinic; OR More than 3 months has passed since you last attended drug and alcohol treatment”.

2.6.2. Depression

The Patient Health Questionnaire (9 item) (PHQ-9) was used to assess symptoms of depression. The PHQ-9 has good reliability and validity in substance abusing populations (Dum et al., 2008; Hepner et al., 2009) and is sensitive to detecting mild levels of depression among those seeking treatment for substance use (Hepner et al., 2009). A cut point of 12 has demonstrated a sensitivity of 81% and specificity of 75% compared to a clinical interview for identifying depressive disorders among outpatient substance abusers (Delgadillo et al., 2011). Therefore, a score of 12 or more was used to define elevated symptoms of depression. This measure acted as the comparator for assessing sensitivity and specificity of clinician judgements.
2.7. Clinician data collection

Consenting clinicians completed a 4-item questionnaire providing their gender, age, the number of years they have worked as a drug and alcohol clinician, and number of hours they worked as a drug and alcohol clinician per week. Clinicians then completed a 4-item checklist for each participating client. Checklists were either provided in participating clients’ charts by the reception staff or kept in the clinic rooms and clinicians asked the clients if they participated in the study. The checklist instructed clinicians to provide clinical judgement to identify if the client was a current smoker, had symptoms of depression, consumed alcohol at risky levels or used illicit substances. The inclusion of multiple health risks was used to decrease the likelihood of a response bias through cueing clinicians to assess depression where they normally would not. Clinicians were informed via the checklist: “Your view may be based on information you have received directly from the client, your observations, clinical notes or any other information sources available to you”. Definitions for each of the risk factors were provided on the checklist with references to the relevant literature. The definition provided for symptoms of depression was as follows: “A person with symptoms of depression may have during the past 2 weeks: felt little interest or pleasure; felt down, depressed or hopeless; had trouble falling asleep or being very restless; or had suicide ideation”. Clinicians indicated ‘Yes’, ‘No’ or ‘Unsure’ for each health risk listed on the checklist. The client’s name and date of birth were included on the checklist to allow for data linkage. Clinicians were not provided with a timeframe for completing the checklist, however, they were asked to indicate whether they completed it during the consultation, immediately after the consultation or at another time. Completed checklists were returned to the research team.

2.8. Ethics approval

The Hunter New England Human Research Ethics Committee (15/06/17/4.02) and the University of Newcastle (H-2015-0414) granted full ethical approval for this research.

2.9. Data analysis

Counts and percentages for all clinician and patient demographic variables were calculated. Each item for the PHQ-9 was scored from 0 to 3, with a maximum possible score of 27. A score of ≥ 12 was used as the cut point for categorising patients as having elevated symptoms of depression and this was compared to a “Yes” or “No” rating from clinicians on the presence of depressive symptoms. Where a clinician indicated ‘Unsure’ for symptoms of depression (n = 2), this was coded as ‘No’ under the assumption that the clinician had not assessed for depressive symptoms. Frequencies of client depression, along with estimates of sensitivity, specificity, PPV and NPV of clinician identification of depression was performed. Participants with depression scores ≥ 12 were included a logistic regression, using complete case analysis (under the missing completely at random assumption), to model the odds of being correctly identified (Yes/No) as having elevated symptoms of depression by their clinician. Clinician and client characteristics were modelled separately since the size of the data set and number of events prevented us looking at the characteristics combined. While the response options for the ‘living with’ variable category were not mutually exclusive, they were collapsed in the regression in a way that rendered them exclusive. All regression models utilized cluster robust variance estimation to account for the clustering of clients within physicians and adjusted for hospital site as a design variable in the regression analysis. Odds ratios (ORs) and 95% Wald based confidence intervals and p-values are presented. For the client characteristic regression, the Hosmer-Lemeshow test was used to assess model calibration and discrimination was assessed with the c-statistic. Client variables with more than two levels were initially assessed for joint significance before being included in the model. All variables assessed demonstrated p-values < 0.2 and therefore were included in the model to examine individual interactions. McFadden’s Pseudo R² values are also presented. A p-value threshold of 5% was used to declare statistical significance. All statistical analyses were programmed using Stata V13 (Statacorp, College Station, TX).

3. Results

3.1. AOD clinician characteristics

At the two participating clinics, 19 drug and alcohol clinicians were invited to take part in the study, all of whom consented. Eighteen clinicians provided data on their professional backgrounds, which included medicine (n = 6), nursing (n = 11) and psychology (n = 1). Clinicians completed an average of 10 (SD = 10.8) checklists each. The majority of clinicians were male (57.9%, n = 11). Three clinicians had missing data for age, hours worked per week and years spent working as a drug and alcohol clinician. The mean age of clinicians, using the available data, was 49.8 (SD = 11.7; range = 26-69) and the mean hours worked per week was 38.2 (SD = 7.1; range = 15-50). The majority had spent 16 years or more working as a drug and alcohol clinician (37.5%, n = 6), 31.3% (n = 5) had spent 5 years or less, and 31.3% (n = 5) had spent 6–15 years.

3.2. AOD client characteristics

Of the 253 clients approached for the study, 248 (98.0%) were eligible and 215 (86.7%) consented to participate. Clinicians completed checklists for 213 clients and of these clients, 202 had matching client survey data available. The full sample of client demographics can be found in Table 1. Clients had a mean age of 39 (SD = 11.3) and most were male (56.9%, n = 115) and had a high school education level (39.6%, n = 78). Almost half of all clients were seeking treatment for alcohol misuse as their primary drug of concern (49.8%, n = 99).

3.3. Clinician identification of elevated symptoms of depression

In total, 111 (55%; 95% CI: 46.0, 61.9) clients reported elevated symptoms of depression. Sensitivity of clinician identification of depression was moderate with 73.0% (95% CI = 63.7, 81.0) of clients who scored ≥ 12 on PHQ-9 identified as having elevated symptoms of depression by their clinician. Specificity was low with 49.5% (95% CI = 39.9, 61.2) accurately identified as not having elevated symptoms of depression. The PPV was 64.3% (95% CI = 55.3, 72.6) and the NPV was 39.7% (95% CI = 48.6, 71.6).

3.4. Clinician characteristics associated with accurate identification of elevated symptoms of depression

In total, 89 participants had complete clinician data available and 90 participants had complete client data available, which were included in two separate regression models. The logistic regression for the clinician characteristics associated with accurate identification of elevated symptoms of depression among substance misusing clients can be found in Table 2. Hours worked per week was not included in the regression due to little variation in clinician responses. The regression model using clinician characteristics was found to account for approximately 19% of the variance in the data (Pseudo R² = 0.1939). Number of years spent working as a drug and alcohol clinician was significant within this model (P = 0.0035). Adjusted ORs showed that those with 6–15 years’ experience as a drug and alcohol clinician were 11 times less likely to identify elevated symptoms of depression compared to those who had 5 years or less experience and this was statistically significant.
found in Table 3. The model was tested for collinearity using the Hosmer-Lemeshow chi² test (P = 0.7643) and the regression model using client characteristics was found to account for approximately 24% of the variance in the data (Pseudo R² = 0.2445). Adjusted ORs showed that those whose main substance of abuse was alcohol were 4 times as likely to be identified as depressed compared to those who were misusing prescribed medications and this was statistically significant (OR = 4.59; 95% CI: 1.71, 12.28; P = 0.002). Those who were new to treatment were almost 9 times as likely to be identified as depressed compared to those who had been in treatment for 3 weeks or more and this was statistically significant (OR = 8.83; 95% CI: 3.36, 23.22; P < 0.0001).

4. Discussion

This study is one of the first to examine the accuracy of clinician identified symptoms of depression, as well as the characteristics associated with accurate identification, among a sample of AOD outpatients.

4.1. Accuracy of clinician identification of elevated symptoms of depression

The sensitivity and PPV showed moderate accuracy, indicating that clinicians identified the majority of those with elevated symptoms of depression. However, specificity and NPV were quite low, indicating clinician’s over-identified depressive symptoms. This finding contrasts to McMillan et al.’s finding which indicated a lower rate of accurate identification, as well as underdiagnosing to be more common than over diagnosing (McMillan et al., 2008). These studies may differ due to different data collection methods. While we employed an active method of reporting symptoms of depression, through asking clinicians to complete individual checklists, McMillan et al. performed an audit of clinical notes to identify reported depression. Our method may have prompted clinicians to report greater depressive symptoms than they would record within clinical notes. Our study also asked clinicians whether clients had symptoms of depression as opposed to a diagnosis of depression, which could also have led to discrepancies between these two studies. However, as many clients in this setting present with elevated symptoms of depression without necessarily meeting the criteria to McMillan et al.’s finding which indicated a lower rate of accurate identification, among a sample of AOD outpatients.

3.5. Client characteristics associated with accurate identification of elevated symptoms of depression

The logistic regression for the client characteristics associated with accurate identification of elevated symptoms of depression can be

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subgroup</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>N/A</td>
<td>M=39.0 (SD=11.3)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>115 (56.9)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>87 (43.1)</td>
</tr>
<tr>
<td>Aboriginal or Torres Strait Islander origin</td>
<td>No</td>
<td>194 (96.0)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>5 (2.5)</td>
</tr>
<tr>
<td>Education level</td>
<td>Primary school</td>
<td>9 (4.5)</td>
</tr>
<tr>
<td></td>
<td>High school</td>
<td>78 (39.6)</td>
</tr>
<tr>
<td></td>
<td>Trade or vocational training</td>
<td>72 (35.6)</td>
</tr>
<tr>
<td></td>
<td>University degree</td>
<td>40 (19.8)</td>
</tr>
<tr>
<td>Current employment</td>
<td>Full-time work</td>
<td>51 (25.3)</td>
</tr>
<tr>
<td></td>
<td>Part-time or casual work</td>
<td>28 (13.8)</td>
</tr>
<tr>
<td></td>
<td>Home duties</td>
<td>17 (8.4)</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>65 (32.2)</td>
</tr>
<tr>
<td></td>
<td>Retired</td>
<td>6 (3.0)</td>
</tr>
<tr>
<td></td>
<td>Disability pension</td>
<td>15 (7.4)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>6 (3.0)</td>
</tr>
<tr>
<td>Private health insurance</td>
<td>Yes</td>
<td>55 (27.2)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>143 (71.3)</td>
</tr>
<tr>
<td>Possession of a concession card</td>
<td>Yes</td>
<td>113 (55.9)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>85 (42.1)</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married or living with partner</td>
<td>50 (24.8)</td>
</tr>
<tr>
<td></td>
<td>Divorced or separated</td>
<td>50 (24.8)</td>
</tr>
<tr>
<td></td>
<td>Widowed</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td></td>
<td>Never married</td>
<td>96 (47.5)</td>
</tr>
<tr>
<td>Lives with</td>
<td>Family</td>
<td>124 (61.4)</td>
</tr>
<tr>
<td></td>
<td>Friends/unrelated flatmate</td>
<td>26 (12.9)</td>
</tr>
<tr>
<td></td>
<td>Alone/No stable arrangement</td>
<td>57 (28.2)</td>
</tr>
<tr>
<td>Main treatment seeking substance</td>
<td>Alcohol</td>
<td>99 (49.8)</td>
</tr>
<tr>
<td></td>
<td>Amphetamines</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td></td>
<td>Benzodiazepines</td>
<td>8 (4.0)</td>
</tr>
<tr>
<td></td>
<td>Cannabis</td>
<td>20 (10.1)</td>
</tr>
<tr>
<td></td>
<td>Heroin</td>
<td>11 (5.5)</td>
</tr>
<tr>
<td></td>
<td>Methamphetamine</td>
<td>26 (13.1)</td>
</tr>
<tr>
<td></td>
<td>Prescribed Medication</td>
<td>29 (14.6)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>4 (2.0)</td>
</tr>
<tr>
<td>Treatment length</td>
<td>Initial appointment</td>
<td>122 (60.4)</td>
</tr>
<tr>
<td></td>
<td>2 weeks or less</td>
<td>34 (16.8)</td>
</tr>
<tr>
<td></td>
<td>3 weeks or more</td>
<td>44 (21.8)</td>
</tr>
</tbody>
</table>

*Not all percentages = 100% due to some missing data.
*Participants were able to select more than one response for this question, therefore the proportions presented are > 100%.

(OR = 0.09; 95% CI: 0.02, 0.37; P = 0.001). No effect was found for clinician gender.

4.2. Clinician characteristics associated with accurate identification of elevated symptoms of depression

Number of years working as a drug and alcohol clinician was a

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Sub group</th>
<th>Identification of depression</th>
<th>Odds of identification of depression</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>50% (n = 14)</td>
<td>50% (n = 15)</td>
<td>ref</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>21.31% (n = 13)</td>
<td>78.69% (n = 48)</td>
<td>2.11</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>ref</td>
<td>ref</td>
<td>0.544</td>
</tr>
<tr>
<td></td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
<td></td>
</tr>
<tr>
<td>Years as D and A clinician</td>
<td>≤5</td>
<td>9.52% (n = 4)</td>
<td>90.48% (n = 38)</td>
<td>ref</td>
</tr>
<tr>
<td></td>
<td>6–15</td>
<td>47.62% (n = 10)</td>
<td>52.38% (n = 11)</td>
<td>0.08 (0.02, 0.35)</td>
</tr>
<tr>
<td></td>
<td>16+</td>
<td>50% (n = 13)</td>
<td>50% (n = 13)</td>
<td>0.43 (0.04, 5.14)</td>
</tr>
</tbody>
</table>

*Age was not included in the regression due to multicollinearity (variance inflation factor = 23.18).
significant factor associated with accurate identification of elevated symptoms of depression. Those who had been working for 6–15 years were 11 times less likely to accurately identify elevated symptoms of depression compared to those who had been working as a clinician for five or less. The number of clinicians included in this study were relatively small warranting caution when interpreting this finding. However, this finding may indicate greater awareness of comorbidity in recent years and improvements in clinician training in this area. While this finding is positive, it also suggests that clinicians who have been in the workforce for greater than five years may require additional training in assessing and managing comorbid conditions. Existing resources such as PsyCheck (Lee et al., 2011), which includes assessment and intervention strategies for comorbid conditions within AOD settings, may be useful for this purpose.

### 4.3. Client characteristics associated with accurate identification of elevated symptoms of depression

Clients receiving alcohol treatment were four times more likely to be accurately identified as having elevated symptoms of depression compared to those misusing prescribed medication. Individuals with depression are more likely to misuse prescriptions medication compared to those without (Grattan et al., 2012; Zullig and Divin, 2012), however, this comorbidity may be less apparent to clinicians as misusing prescription medication is less common than alcohol misuse in AOD treatment settings (Australian Institute of Health, 2016). Improving clinician knowledge about depression among this subgroup of clients seeking AOD treatment may be warranted.

Clients who were new to treatment were almost nine times as likely to be accurately identified compared to those three weeks or more in treatment. This may indicate a lack of continuity in assessing symptoms of depression, possibly reflecting an assumption that depressive symptoms will resolve as treatment progresses. However, depression has been found to be independent rather than secondary to AOD misuse in a significant proportion of people with this co-morbidity (Nunes et al., 2006). Furthermore, guidelines on treating comorbidity within AOD settings indicate that assessing mental health conditions throughout all stages of treatment is important for case management (Kleber et al., 2007; Marel et al., 2016). Acknowledging this and providing care for symptoms of depression which persist after a period of abstinence could improve treatment for clients. Failure to identify elevated symptoms of depression among clients progressing with their treatment may have implications for long term AOD management and relapse prevention.

### 4.4. Clinical implications and future research

A quarter of those with elevated symptoms of depression in the current study were not identified by clinicians. Routine screening may assist with overcoming this gap in identifying depressive symptoms (Deady, 2009). While screening does not provide a diagnosis of depression, it provides a brief and inexpensive way to monitor and detect depressive symptoms. The World Health Organisation outlines a set of principles for assessing the benefits of screening (Wilson and Jungner, 1968). These principles are based on acceptability, effectiveness, cost-benefits and adequate treatment being made available. It has been reported that clients within AOD treatment services find brief screening tools for mental health conditions acceptable (Delgadillo et al., 2012). While some research has been conducted examining the feasibility and uptake of screening in AOD settings (Hides et al., 2007; Lee et al., 2010; Lubman et al., 2008), little has been done examining the effectiveness of screening on improving treatment provisions. Future research should focus on evaluating the effectiveness of routine screening for improving treatment outcomes. Training resources and guidelines need to be readily available to clinicians managing depressive symptoms. Researchers should work with clinicians to establish clear and effective steps for managing mental health comorbidities. In addition, future research could further examine characteristics associated with accurate identification of elevated depressive symptoms within a larger sample. Exploring the influence of additional treatment characteristics, such as drug consumption patterns, type of treatment or the training background of the treatment provider, may also improve our understanding about individuals at risk of unidentified symptoms of depression.

### 4.5. Limitations

A limitation of this study is the potential inconsistency between the PHQ-9 assessment of depression and the clinician assessment of depression. According to the PHQ-9, a score of 12 or greater signifies elevated symptoms of depression while no specific threshold for symptoms of depression was provided to clinicians. This may have resulted in clinicians applying a lower threshold of what constitutes the presence of symptoms of depression which may account for some of the inaccuracies between the two measures. However, clinicians were informed that they were able to use any tools at their disposal for
assessing symptoms of depression, indicating they were able to apply a threshold to assess this. Additionally, while a clinical interview is considered the gold standard for determining a diagnosis of depression, providing a full clinical interview for each participant was not feasible in the current study. Another limitation for this study was the modest sample size of clients and clinicians which may have impacted the generalisability of the findings.

4.6 Conclusion

This study demonstrated that AOD clinicians identify elevated symptoms of depression with moderate accuracy. While over-identification was more common than under-identification, approximately a quarter of those with elevated symptoms of depression were not identified as such by their clinician. Clients misusing prescribed medications and those who were not new to treatment were less likely to be identified as having elevated symptoms of depression compared to other clients.

Role of funding source

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Conflict of interest

No conflict declared.

Contributors

BH, MC, JB, and RSF conceptualised the study. CO assisted with statistical planning and data analysis. BH, MC, JB and RSF oversaw data collection. All authors contributed to interpretation of the study findings and contributed to drafting the manuscript. All authors approved the final version of the manuscript.

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References

Australian Institute of Health. 2016. Alcohol and Other Drug Treatment Services in Australia, Drug Treatment Series. AIHW, Canberra, Australia.


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