Depressive Symptoms and Associated Clinical Characteristics in Outpatients Seeking Community-based Treatment for Alcohol and Drug Problems

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Abstract

Background—Comorbid psychiatric and substance use disorders are common and associated with poorer treatment engagement, retention, and outcomes. This study examines the presence of depressive symptoms and the demographic and clinical correlates in a diverse sample of substance abuse treatment-seekers to better characterize patients with co-occurring depressive symptoms and substance use disorders and understand potential treatment needs.

Methods—Baseline data from a randomized clinical effectiveness trial of a computer-assisted, web-delivered psychosocial intervention were analyzed. Participants (N=507) were recruited from 10 geographically diverse outpatient drug treatment programs. Assessments included the self-report Patient Health Questionnaire, and measures of coping strategies, social functioning, physical health status, and substance use.

Results—One-fifth (21%; n=106) of the sample screened positive for depression; those screening positive for depression were significantly more likely to screen positive for anxiety (66.9%) and PTSD (42.9%). After controlling for anxiety and PTSD symptoms, presence of depressive symptoms remained significantly associated with fewer coping strategies (p = .001),

greater impairment in social adjustment (p < .001), and poorer health status, (p < .001), but not to days of drug use in the last 90 days (p = .14).

Conclusions—Depression is a clinically significant problem among substance abusers and, in this study, patients who screened positive for depression were more likely to have co-occurring symptoms of anxiety and PTSD. Additionally, the presence of depressive symptoms was associated with fewer coping strategies and poorer social adjustment. Coping skills are a significant predictor of addiction outcomes and it may be especially important to screen for and enhance coping among depressed patients. Evidence-based interventions that target coping skills and global functioning among substance abusers with depressive symptoms may be important adjuncts to usual treatment.

INTRODUCTION

Substance use disorders (SUD) are prevalent and often co-occur with other psychiatric disorders, depression in particular.[1,2] Similarly, most cases of Major Depressive Disorder (MDD) occur in people with a history of another Diagnostic and Statistical Manual (DSM) disorder, often an alcohol or drug dependence problem.[3–5] The association between mood, anxiety and substance use disorders has been established by large scale community surveys, which show that having a substance use disorder increases the likelihood of having various mood or anxiety disorders by factors of 2 to 4 or more.[6] For people with substance dependence, the presence of depression is associated with greater illness severity and substantial disability.[7–10] Despite these issues, most individuals with substance use disorders and comorbid psychiatric illness have never been treated for their mental disorder and those who have, tend to have poorer addiction treatment outcomes.[7,8,11]

Depression often goes unrecognized and untreated in substance using populations, yet evidence suggests depression responds to specific antidepressant treatment in substance dependent populations.[9] As such, there is a recognized need for routine assessment of depression in people with primary substance use disorders.[12,13] Ideally, a structured clinical diagnostic interview is performed to obtain an accurate diagnosis of depression. Comprehensive assessment of mood disorders can be time consuming and requires additional resources that generally are not readily available in substance abuse treatment, and, therefore, are not common practice.[1] Screening tools may be a pragmatic answer to time-strapped staff to identify additional needs among outpatients.

The current study examines the prevalence of a positive depression screen via a commonly utilized brief assessment tool in a broadly representative, contemporary sample of patients entering community based outpatient treatment for substance use disorders. The study was conducted using baseline data of patients who had enrolled in a large multisite randomized clinical effectiveness trial with broad eligibility criteria. Specifically, the following questions were addressed: (1) What are the sociodemographic and clinical correlates for participants who screen positive for depression versus those who do not?, and (2) What are the differences in coping strategies, social adjustment, and physical health for those with and without a positive depression screen? Examination of comorbid psychiatric disorders, coping strategies, social adjustment and physical health status of individuals screening

positive for depression may help to guide both clinicians and researchers in determining treatment needs of substance abusing individuals and considering additional evidence-based interventions.

METHODS

Participants and Settings

Participants (*N* = 507) were recruited from 10 geographically diverse, community-based outpatient substance abuse treatment programs across the U.S. into an effectiveness study. Participants were randomly assigned to receive (1) usual outpatient care ("treatment-as-usual") or (2) modified treatment-as-usual whereby approximately two hours per week of counseling was substituted with a web-based version of the Community Reinforcement Approach (CRA)[14] plus abstinence-contingent incentives,[15,16] known as the Therapeutic Education System (*TES*).[17] The study was conducted within the National Institute on Drug Abuse (NIDA) National Drug Abuse Treatment Clinical Trials Network (CTN), which aims to promote collaboration between researchers and community-based providers to address questions of greatest relevance to clinicians and rapidly disseminate promising, technologically innovative treatments. Details of the study rationale and design have been previously published.[18] The study was reviewed and approved by the Institutional Review Board (IRB) at New York State Psychiatric Institute, as well as the IRBs of each of the participating treatment programs; all participants provided written informed consent.

Site selection criteria were broad with the goal of testing the intervention in a wide range of outpatient substance abuse populations, and geographic location was an important consideration in enhancing representation in the trial. Opioid treatment programs were excluded, as were sites with a patient population comprised primarily of individuals with alcohol use disorders. Selected sites demonstrated variability on a number of attributes (e.g., gender, race/ethnicity, primary substance of abuse, treatment retention) in order to increase the representativeness of the sample, a desirable attribute of effectiveness trials.[18]

Participant eligibility criteria were also kept purposively broad. To be eligible, participants: 1) were in the first 30 days of their current treatment episode; 2) reported use of a drug of abuse in the past 30 days (hence patients with alcohol as the primary problem were eligible if they also reported at least one day of drug use); 3) were not currently prescribed an opioid replacement medication; and 4) demonstrated sufficient English literacy for study activities. Data collected during the baseline assessment are examined in this report.

Measures

The baseline assessments were conducted by trained research staff members at the treatment programs and included screening measures for depression and related mental health disorders (anxiety and Posttraumatic Stress Disorder [PTSD]), as well as measures of coping strategies, social functioning, physical health status, and substance use. The mean time between treatment entry and baseline assessment was nine days (SD = 7.4 days).

Screen for Depression and Other Psychiatric Disorders—The Patient Health Questionnaire (PHQ) is a self-report instrument, designed for screening in primary care

settings,[19,20] and was used to screen for the presence of DSM-IV symptoms of depression, generalized anxiety, and panic disorder. Modules for PTSD and social anxiety were developed in the same manner as the original PHQ (i.e., derived directly from the DSM-IV diagnostic criteria) and added to the measure. Participants rated the frequency of symptoms for the last two weeks for each DSM-IV symptom-criterion. The PHQ-9 depression subscale is a self-report of frequency of symptoms on each of the nine DSM-IV criteria for depression, which results in a range of possible scores from 0 to 27.[21] PHQ-9 scores of 5 – 9 represent minimal depressive symptoms, 10 – 14 represent mild symptoms, 15 – 19 represent moderately severe symptoms, and ≥ 20 represent severe depressive symptoms.[22] Participants with a PHQ-9 score ≥ 10 were considered to have screened positive for depression. Studies in primary care samples indicate the PHQ-9 to be a reliable and valid measure of depression severity with a Cronbach's alpha of 0.89.[22] The PHQ-9 has also demonstrated internal consistency and reliability with both residential and outpatient substance abuse populations and is correlated with severity levels of alcohol and drug abuse.[12,13]

The PHQ subscales for anxiety and PTSD were coded as binomial categorical variables. For the purposes of this study, participants were considered to have screened positive for anxiety if they screened positive for generalized anxiety, panic, or social anxiety disorders in the following manner: at least 2 of 3 social anxiety symptoms were endorsed, at least 4 of 11 panic symptoms were endorsed, or at least 3 of the 6 generalized anxiety symptoms were endorsed. Participants were considered to have screened positive for PTSD if at least 4 of 6 PTSD symptoms were endorsed. The PHQ subscales for panic and generalized anxiety have good psychometric properties.[20] Psychometric evaluation of PHQ for PTSD and social anxiety has yet to be completed.

Functioning—The Coping Strategies Scale (CSS)[23] is a 23-item questionnaire assessing change processes and skills taught in coping-oriented treatments using a 4-point frequency scale for each strategy (1=never to 4=frequently). It was adapted to accommodate all substances of abuse. Items were dichotomously coded into endorsed skills (responses of 3 or 4) or not endorsed (responses of 1 or 2), and were summed (range=0–23) to indicate the total number of coping skills used. Summarizing responses in this way provides a meaningful measure of the number of various coping skills used and is a common conceptual convention.[24–26]

The Social Adjustment Scale - Self-Report (SAS-SR)[27] is a 54-item self-report measure of instrumental (i.e. what we do in the world) and expressive (i.e. how we relate to others) role performance. Items are rated on a 5-point scale (1 to 5) with higher scores indicating greater impairment. The global score was calculated as the average of the eight subscale scores.

Physical health status was measured using the visual analog scale from the EQ-5D (EQ VAS).[28] The EQ VAS is a subjective self-report measure of overall physical health on a scale of 0–100, with 0 being the "worst imaginable health state" and 100 being the "best imaginable health state."

Drug use characteristics—Counts of days using drugs and alcohol were retrospectively assessed for the past 90 days using the Timeline Follow-back method[29] and included the following categories: alcohol, cocaine, stimulants, opioids, marijuana, and other substances.

Data Analysis

Two sets of analyses were conducted. The first was to determine if there were differences between participants with and without a positive screen for depression, as measured by the PHQ-9. First, differences between these two groups were tested using a chi-square test for discrete measures and a nonparametric Wilcoxon test for continuous measures for data with non-normal distribution. Second, the effect of the presence or absence of a positive screen for depression was also examined to determine its impact on social adjustment, coping, days of alcohol or illicit drug use, and physical health. A two-stepped approach was used: (1) First, the presence of a positive screen for depression was entered alone to examine the associations of depressive symptoms with functioning and substance use; unadjusted models examining the associations between positive screens for PTSD and other anxiety disorders and functioning were also fit. (2) Next, positive screens for PTSD and other anxiety disorders were added to the models to test associations between depressive symptoms and measures of functioning or substance use, to examine the extent to which these associations are affected when controlling for anxiety and PTSD symptoms. The association between depressive symptoms and coping, drug use, and physical health was estimated using a negative binomial model to account for overdispersion. The association between depressive symptoms and social adjustment was estimated using a linear regression model. Alpha was set at 0.05, two-tailed, without correction for multiple tests in this exploratory analysis. The statistical package *SAS* 9.2 was used for all analyses.

RESULTS

Table 1 shows the demographic, clinical, functioning, and drug use characteristics of the sample (*N*=507) for those with a positive screen for depression (21%, *n* = 106) and those with a negative screen (79%, *n* = 401). The majority of participants with a positive screen for depression fell into the moderately severe (53%, *n* = 56) or severe (31%, *n* = 33) categories. Though not statistically significant, participants with a positive screen for depression were slightly older than those who screened negative, and more likely to be female. There were no significant differences between participants with a positive screen for depression versus those who screened negative on race/ethnicity, education, marital status or employment status.

Participants with a positive screen for depression reported greater impairment compared to those who screened negative for depression across several functional measures, including global social adjustment, coping strategies, and perceived health status. Compared to those with a negative screen for depression, participants with a positive screen for depression reported significantly more days of illicit drug use and were more likely to have a positive screen for PTSD or other anxiety disorders. There were no statistically significant differences between participants with a positive screen for depression versus those who

screened negative for depression on demographic characteristics, primary substance of abuse, and alcohol using days.

Associations between Positive Depression, PTSD, and Anxiety Screens and Functioning/Drug Use

Regression analyses were used to examine the association between social adjustment, coping strategies, physical health status, and days of illicit drug use in participants with a positive screen for depression compared to those without (Table 2). Results revealed that participants with a positive screen for depression had significantly worse coping strategies scores, higher impairment on social adjustment scores, poorer health status and more days of illicit drug use. Results also indicated that a positive screen for an anxiety disorder and PTSD were both associated with poorer health status, social adjustment and days of illicit drug use, but not with coping strategies.

In the adjusted models (lower portion of Table 2), all three categories of psychiatric symptoms were included in the same model. Positive screens for PTSD and other anxiety disorders showed similar associations to the unadjusted models, with poorer functioning and greater drug use, with one exception – screening positive for anxiety disorders was associated with better coping. In the adjusted models, there were no changes in the depression results on coping and only slight diminution in the magnitude of regression coefficients for social adjustment, health, and drug use. The coefficients for PTSD and other anxiety disorders were diminished, compared to the unadjusted models.

DISCUSSION

Data from a sample of stimulant using patients seeking community based addiction treatment across a geographically diverse set of treatment programs was used to better characterize patients with co-occurring depressive symptoms and to understand their potential treatment needs. Though the association between mood and substance use disorders has been previously established by large community surveys,[6] the current study is one of the relatively few studies that have examined characteristics of community-based samples with substance use disorders. Just over 20% of the current sample screened positive for symptoms of depression, higher than what would be expected based on the community surveys. The higher prevalence of positive screens is likely explained by greater overall severity of mood disorders in treatment-seeking samples,[30, 31] thus, making screening positive more likely.

Previous research and clinical discussions suggest a close, predictable relationship between depression and anxiety.[32] Of patients screening positive for depression in this sample, 43% screened positive for symptoms of PTSD and 67% screened positive for other anxiety symptoms. This finding corresponds to current themes in the refining of the classification of anxiety and depression, and suggests sufficient similarity and overlap of symptoms to consider a clinical grouping reflecting this comorbidity, and the notion that these disorders may reflect different manifestations of common underlying diatheses.[33] Clinically, our findings support the recommendation[6,12] that when a substance dependent patient presents with depressive symptoms, it is important to perform a comprehensive assessment for mood

and anxiety disorders. Comprehensive assessments may also help distinguish non-substance induced mental health disorders from substance-induced disorders since depressive symptoms and anxiety symptoms frequently overlap with the effects of chronic substance use or withdrawal.[34] Furthermore, withdrawal from substances can often mimic an anxiety disorder, creating diagnostic challenges.[35]

Depression is more common among women than among men.[3] This trend was observed in the present sample, although the difference in the prevalence of screening positive for depression between women and men was small. While this finding supports the role of female sex as a risk factor for depression in substance dependent populations,[36] it also highlights that depressive symptoms are a clinically significant problem among male substance abusers, perhaps especially in treatment seeking samples.

In this sample, the presence of depressive symptoms was associated with fewer coping strategies and poorer social adjustment, which is consistent with previous research on people with mental health disorders that found the reasons most often endorsed for using substances included relieving depression, achieving or maintaining euphoria, and improving self-confidence and social abilities.[37] Coping skills are a significant predictor of treatment outcomes.[23] Consequently, screening for the presence of comorbid depression and/or anxiety symptoms may identify distinct substance use subgroups that may require evidence-based interventions for improving their coping skills and overall functional impairment.[34] A number of effective cognitive behavioral coping skills strategies have empirical support for success.[40,41]

Limitations

A major strength of this study is that data is drawn from a sample of substance abusing patients seeking community based addiction treatment across a geographically diverse set of treatment programs. Thus, results may be seen as relatively generalizable to a broader clinical sample. Despite this strength, there are several limitations. First, the positive screens for depression and other psychiatric disorders were not validated against a full, structured clinical diagnostic interview. Although a version of the PHQ adapted for substance dependent patients was administered, it is cannot determine if depressive symptoms are substance-induced. Further, although the PTSD and social anxiety subscales were based on DSM-IV criteria, they have not been psychometrically validated. Second, the study did not prospectively assess the relationship between symptoms of depression, anxiety and outcomes. Future studies should aim to better clarify the temporal relationship between these mood symptoms, substance use, and associated outcomes.

Conclusion

This study highlights the prevalence of depressive symptoms among patients in substance abuse treatment programs, and the importance of conducting a structured clinical diagnostic interview in the presence of a positive depression screen. Understanding the factors that might affect outcomes is important for the planning and implementation of substance abuse treatment. The findings from this study further suggest that patients with mental health disorders in substance abuse treatment should be assessed for coping skills and global

functioning to build on their strengths, enhance ancillary services, and tailor effective interventions for those with poor coping strategies.

Acknowledgments

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TABLE 1

Demographic, Clinical, Functioning, and Drug Use at Baseline for Participants (*N*=507) With Positive and Negative Screens for Depression

	Positive Depression Screening *n*=106 (21%)	Negative Depression Screening *n*=401 (79%)	X^2/Wilcoxon Z
	Mean (SD) or %		
Demographic			
Sex (% women)	45.71	35.91	3.40[+]
Age (years)	36.50 (10.34)	34.47 (11.01)	1.92[+]
Race/Ethnicity			
White	55.66	51.87	
Black/African American	18.87	22.94	4.59
Hispanic/Latino	15.09	9.73	
Multi-racial/Other	10.38	15.46	
Education			
< High School	27.36	22.19	
High School Diploma/GED	54.72	62.84	2.34
> High School	17.79	14.96	
Marital Status			
Single/Never married	55.66	62.09	
Married	17.92	13.22	1.98
Divorced/Separated/Widowed	26.42	24.69	
Employed	38.68	41.90	0.36
Clinical Characteristics			
Other Anxiety Symptoms (general anxiety, social anxiety, panic)	66.98	44.14	17.51[***]
PTSD	42.86	15.31	37.73[***]
Depressive Symptom Severity			
Mild (10–14)	16.04		
Moderate (15–19)	52.83	-	-
Severe (20)	31.13		
Functioning			
Social Adjustment Scale (1–5)			
Global	2.61(0.51)	2.06(0.43)	9.22[***]
Work	1.96(0.71)	1.61(0.53)	4.40[***]
Social/Leisure	2.96(0.67)	2.36(0.57)	8.19[***]
Extended Family	2.45(0.70)	1.87(0.66)	7.55[***]
Primary Relationship	2.30(0.62)	2.01(0.61)	2.54[*]
Parental	1.60(0.66)	1.28(0.57)	2.61[**]
Family Unit	3.04(1.04)	2.27(1.00)	6.66[***]

	Positive Depression Screening n=106 (21%)	Negative Depression Screening n=401 (79%)	X^2/Wilcoxon Z
	Mean (SD) or %		
Coping Strategies Scale (0–23)	15.21(5.53)	17.24(5.37)	3.78***
Physical Health (0–100)	60.40(23.25)	76.22(17.16)	6.50***
Drug Use Characteristics			
Primary Substance of Abuse			
Alcohol	24.53	19.45	
Cocaine	28.30	17.96	
Stimulants	10.38	14.46	
Opioids	19.81	21.70	9.88+
Marijuana	16.04	24.19	
Other	0.94	2.24	
Days of any illicit drug use (90d)	45.04(29.75)	36.13(27.58)	2.80**
Days of any alcohol use (90d)	18.05(23.22)	16.72(23.24)	1.32

Note.

+ p < .10.

* p < .05.

** p < .01.

*** p < .001.

TABLE 2

Unadjusted and Adjusted Regression Models of Baseline Functioning and Days of Drug Use as a Function of Positive Screening for Depression, PTSD, and Other Anxiety (General, Social, and Panic) Symptoms

	Coping				Global Social Adjustment				Physical Health				Drug Use			
	b	*SE*	*t*	*p*	*b*	*SE*	*t*	*p*	*b*	*SE*	*t*	*p*	*b*	*SE*	*t*	*p*
Unadjusted Model																
Depression	−0.13	0.04	−3.20	.001	0.55	0.05	11.30	<.001	−0.23	0.03	−7.05	<.001	0.22	0.10	2.19	.028
PTSD	−0.08	0.04	−1.93	.053	0.41	0.05	8.09	<.001	−0.21	0.03	−6.17	<.001	0.21	0.10	2.08	.038
Other Anxiety	0.07	0.03	2.14	.032	0.26	0.04	6.02	<.001	−0.11	0.03	−4.02	<.001	0.14	0.08	1.70	.089
Adjusted Model[a]																
Depression	−0.13	0.04	−3.19	.001	0.43	0.05	8.86	<.001	−0.18	0.03	−5.31	<.001	0.16	0.10	1.50	.134
PTSD	−0.07	0.04	−1.62	.105	0.25	0.05	5.21	<.001	−0.14	0.03	−4.25	<.001	0.15	0.10	1.41	.157
Other Anxiety	0.09	0.03	2.93	.003	0.16	0.04	4.11	<.001	−0.07	0.03	−2.42	.02	0.11	0.08	1.32	.186

Note.

[a] The adjusted model includes all three diagnostic categories (depression, PTSD, and other anxiety disorders).