Impact of anxiety on dropping out of treatment for major depressive disorder at an intensive partial hospitalization program

BACKGROUND: Premature treatment discontinuation (dropout) is a common problem among patients seeking treatment for major depressive disorder (MDD). To prevent treatment dropout, it is important to identify its associated risk factors. The impact anxiety has on treatment dropout for MDD is especially critical to investigate due to the high rates of comorbidity between anxiety and depressive disorders. Evidence for the degree to which anxiety reliably predicts treatment dropout for MDD remains inconclusive and has yet to be investigated at an adult partial hospitalization program. Examining this can help elucidate which factors predict dropout among patients who need intensive treatment for their depression.

METHODS: Participants were patients seeking treatment for MDD at an adult partial hospitalization program (N = 461). A series of Chi-square tests and t tests were conducted to assess for any differences in frequencies of anxiety disorder comorbidities or mean scores of dimensional anxiety among patients who dropped out of treatment and those who did not.

RESULTS: No significant associations between high baseline anxiety and early dropout were found (all P > .05).

CONCLUSIONS: Findings suggest that no specific actions need to be taken to prevent individuals with high baseline levels of anxiety from prematurely dropping out of a partial hospitalization program.
INTRODUCTION

Premature treatment discontinuation (dropout) is a common problem among patients seeking treatment for major depressive disorder (MDD). In general, treatment dropout is defined as a patient unilaterally deciding to discontinue therapy before the problems for which they sought treatment improve. Because of this, there are considerable health, economic, and societal costs associated with attrition from mental health services. Early dropout is associated with worse clinical outcomes, influences where resources are allocated, and adds to the burden of untreated psychiatric disorders. To understand this problem, researchers have sought to quantify how prevalent premature dropout is across various domains. One meta-analysis found that, on average, approximately 20% of patients prematurely drop out of psychotherapy.

To prevent treatment dropout and its negative effects, it is important to identify its associated risk factors. Swift and Greenberg urged researchers to examine more specified topics regarding premature dropout to further illuminate elements that may impact dropout rates, such as patient diagnoses or treatment setting. In the present study, we focus on dropout rates for patients seeking treatment for MDD because it remains one of the most prevalent and commonly untreated psychiatric disorders and poses a substantial economic burden, costing US employers approximately $4.2 billion annually due to lower productivity and time taken off from work.

One especially important predictor of early dropout among patients with MDD that has been examined is the presence of a comorbid anxiety disorder. However, investigations into this association remains scarce. Because of the high rates of comorbidity between anxiety disorders and MDD (eg, 40% to 98% in treatment studies for MDD and generalized anxiety disorder [GAD]), and the increased impairment associated with having both types of disorders instead of only one or the other (eg, higher illness severity, greater chronicity, and significantly increased psychosocial dysfunction), it is important to assess how anxiety may impact one’s likelihood of dropping out of treatment for MDD. The few studies that have examined the impact of anxiety on dropping out of treatment for depression have yielded inconsistent results.

To our knowledge, no studies have disaggregated the various anxiety disorders, or have utilized dimensional scores of anxiety while examining its role on treatment dropout for MDD. Utilizing dimensional symptom measures of anxiety would enable researchers to inquire about any non-disorder–specific aspects of anxiety that may affect dropout rates. This in turn would allow patients who may not be formally diagnosed with an anxiety disorder but who still present with high levels of anxious symptoms (eg, MDD with anxious distress) to be included in the discussion regarding anxiety’s impact on attrition from treatment for MDD.

Anxiety as a predictor for early dropout at an intensive partial hospitalization program (PHP) also has not been explored. Examining this can help elucidate which factors predict early dropout for patients who need more intensive treatment for depression. If anxiety comorbidity does in fact predict higher dropout rates among patients seeking a higher level of care for depression, then special protocols at PHPs could be set in place for patients who present with these symptom profiles to reduce the likelihood of their discontinuation from much-needed psychological services.

In the present study from the Rhode Island Methods to Improve Diagnostic Assessment of Services (MIDAS) project, we investigated anxiety as a predictor of dropout among a large sample of patients seeking treatment for MDD at an intensive PHP. We hypothesized that higher levels of anxiety, as measured by a dimensional self-report scale or assessed via a diagnostic interview, would be associated with higher incidences of treatment dropout. More specifically, we hypothesized that the presence of social phobia or agoraphobia would potentially pose barriers for individuals completing treatment in a program that consists of multiple psychotherapy groups and requires patients to leave their homes for extended periods of time each day.

METHODS

Participants
This study evaluated 461 individuals seeking treatment for DSM-IV/DSM-5 MDD at the Rhode Island Hospital PHP between April 2014 and November 2018. Of these 461 patients, 354 were diagnosed with at least 1 concurrent DSM-IV anxiety disorder.

To receive treatment at the Rhode Island Hospital PHP, patients must be English-speaking, ambulatory, at least minimally self-regulating, and must abstain from alcohol or substance abuse during the course of their
All patients were referred to the PHP by a health care provider or facility (eg, primary care provider, out-patient therapist, inpatient psychiatric hospital). Each day, patients met with their psychiatrist and therapist and attended 4 psychotherapy groups that use interpersonal, didactic, and experiential formats. The program operates on an Acceptance and Commitment Therapy–consistent treatment model.20 The average length of stay was 7.5 days (standard deviation [SD] = 4.7; range 1 to 58 days). Additionally, patients were assigned a code at discharge that indicated the reason for discharge. We operationalized “dropping out” as the patient voluntarily discontinuing treatment (ie, discharging due to nonattendance or reporting dissatisfaction with the program). We did not include patients who discharged due to external limitations (eg, being unable to secure childcare while in treatment; discharging due to insurance no longer covering a PHP level of care; needing to return to work) in the dropout group. All participants provided informed and written consent. The current study was approved by the Rhode Island Hospital Institutional Review Board.

Assessment
All patients received rigorous diagnostic intake assessments by trained diagnostic raters utilizing the Structured Clinical Interview for the DSM-IV (SCID-IV).21 Baseline and last-day anxiety levels were also assessed using the Clinically Useful Anxiety Outcome Scale (CUXOS).22 The CUXOS is a 20-item self-report measure that assesses the severity of anxiety symptoms over the past week and current day in adults. It is a general measure of anxiety rather than a disorder-specific scale, and is a valid measure for assessing anxiety levels in patients with and without specific anxiety disorders.21 It is comprised of 2 subscales: the 6-item psychic anxiety subscale (eg, “I felt nervous or anxious”), and the 14-item somatic anxiety subscale (eg, “I was short of breath”). Items are rated on a Likert scale ranging from 0 (“not at all true”) to 4 (“almost always true.”) Total scores range from 0 to 80 (<10: non-anxious; 11 to 20: minimal anxiety; 21 to 30: mild anxiety; 31 to 40: moderate anxiety; ≥41: severe anxiety). Patients completed the CUXOS for every treatment day. The internal consistency (Cronbach’s alpha) of the CUXOS in the present study was .92.

Baseline and last-day depressive symptom severities were derived using the Clinically Useful Depression Outcome Scale (CUDOS).23 Patients also completed the CUDOS daily. It is a 16-item self-report questionnaire that assesses the severity of depressive symptoms, including depressed mood, anhedonia, fatigue, psychomotor agitation and retardation, guilt, worthlessness, thoughts of death and suicidal ideation, impaired concentration, indecisiveness, appetite changes, insomnia and hypersonnia, and hopelessness over the past week and current day in adults. Items are rated on a Likert scale ranging from 0 (“not at all true”) to 4 (“almost always true”). Total scores range from 0 to 64 (<10: non-depressed; 11 to 20: minimally depressed; 21 to 30: mildly depressed; 31 to 45: moderately depressed; ≥46: severely depressed). The internal consistency (Cronbach’s alpha) of the CUDOS in the present study was .81.

Data analysis
Independent samples t tests were used to assess for differences between dropouts and non-dropouts on baseline CUXOS scores. In addition to assessing mean CUXOS scores in all 461 patients, we assessed CUXOS scores among the 107 patients without a comorbid anxiety disorder to determine if anxiety severity differs as a function of dropout status in depressed patients without a formal anxiety disorder diagnosis. A series of Chi-square tests was also conducted to compare the frequencies of anxiety disorders in patients who did and did not drop out of treatment.

Treatment response, as defined as a ≥50% reduction in CUXOS and/or CUDOS scores from baseline to last treatment day, was also calculated for each patient. To rule out the possibility of symptom reduction (ie, feeling better) as a reason for treatment dropout, we conducted Chi-square tests that assessed for differences in treatment response rates between dropouts and non-dropouts.

RESULTS

The demographic characteristics of the 461 patients with a principal diagnosis of MDD are presented in TABLE 1. The majority of patients were female, white, and had at least a high school education. Out of the 461 patients, 16.3% of patients (n = 75) dropped out of treatment and 83.7% (n = 386) did not drop out. Within the dropout group,
81.3% (n = 61) discharged due to nonattendance and 18.7% (n = 14) reported dissatisfaction with the program. Within the non-dropout group, 84.5% (n = 326) completed treatment and 15.5% (n = 60) discharged before treatment completion due to external factors. The average number of treatment days completed for the dropout group was 2.9 days (SD = 2.76; range 1 to 13 days) and the average number of treatment days completed for the non-dropout group was 8.3 days (SD = 4.27; range 1 to 32 days).

Dropouts and non-dropouts differed significantly on 3 demographic characteristics: gender, education status, and age. Patients who dropped out tended to be younger, less educated, and were more likely to be female than those who did not drop out.

Baseline scores on the CUXOS did not differ significantly between patients who did and did not drop out of treatment, both within the total sample of 461 patients (40.08 SD = 16.4 vs 40.01 SD = 17.6; P > .05), and in the subsample of 107 patients without any concurrent anxiety disorder (30.58 SD = 15.43 vs 26.64 SD = 14.88; P > .05). Additionally, the prevalence of each anxiety disorder did not differ significantly between patients

### TABLE 1
Demographic characteristics of patients with depression who dropped out of treatment and patients who did not (N = 461)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Dropouts (n = 75)</th>
<th>Non-dropouts (n = 386)</th>
<th>Chi-square</th>
<th>Cramér’s V</th>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Female</td>
<td>64</td>
<td>85.3</td>
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<td>Male</td>
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<td></td>
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<td>&lt;12 years</td>
<td>12</td>
<td>16.0</td>
<td>12</td>
<td>3.9</td>
</tr>
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<td>High school graduate or GED</td>
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<td>42</td>
<td>54.2</td>
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<td>College graduate</td>
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<td>25.3</td>
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<td><strong>Marital status</strong></td>
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<td>Widowed</td>
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<td>2</td>
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<td>Separated</td>
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<td>Divorced</td>
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<td>Never married</td>
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<td>53</td>
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<tr>
<td><strong>Age</strong></td>
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<td></td>
</tr>
<tr>
<td>M = 33.73</td>
<td>SD = 15.24</td>
<td>M = 39.02</td>
<td>SD = 14.67</td>
<td>P = .005</td>
</tr>
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<td>D = .35</td>
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</table>

* Chi-square for female/male distribution
* Missing ratings reduced sample size to 455
* Chi-square for graduated high school/did not graduate high school distribution
* Chi-square for married/unmarried distribution
* Chi-square for white/non-white distribution
* P < .01
* P < .05

D: Cohen’s d; M: mean; SD: standard deviation; V: Cramér’s V.
who did and did not drop out of treatment (all $P > .05$; presented in TABLE 2).

Dropouts and non-dropouts also differed significantly in treatment response rates for depression. Twenty-two dropouts (29.3%) had at least a 50% reduction in depression levels, while 161 non-dropouts (41.7%) had a ≥50% reduction in their depressive symptoms (Chi-square $= 4.02$, $P = .029$). Dropouts and non-dropouts did not differ in rates of treatment response for anxiety (37.3% vs 39.9%; Chi-square $= 0.17$, $P > .05$).

**DISCUSSION**

In the present report from the Rhode Island MIDAS project, we examined whether high levels of baseline anxiety, either measured dimensionally or by the presence of a comorbid anxiety disorder, were associated with higher rates of dropout among patients seeking treatment for MDD at an intensive PHP. Out of 461 patients seeking treatment for MDD, 75 dropped out before treatment completion. To our knowledge, this is the first study that has examined dropout rates among patients seeking treatment for depression at an intensive PHP. No differences in baseline anxiety levels were found between dropouts and non-dropouts. Although dropouts and non-dropouts did not differ in their treatment response rates for anxiety, dropouts were less likely to experience a reduction in their depressive symptoms. That dropouts experienced worse treatment outcomes compared with non-dropouts further illustrates the importance of identifying risk factors for premature treatment termination in ambulatory settings.

It was unexpected that clinical levels of anxiety did not have an impact on dropout rates in an intensive PHP. It was especially surprising that the presence of social phobia or agoraphobia had no relation to dropout rates because patients must both attend treatment daily and participate in 4 group therapy sessions per day. Nevertheless, it is possible that patients who were depressed with comorbid social phobia and agoraphobia were less likely to present for treatment in the first place after being informed about the nature of the program.

We also expected that heightened levels of anxiety would correlate with higher rates of dropout because patients with high anxiety in addition to depression tend to be more impaired than patients with relatively low levels of anxiety.10,11 This was suspected to be reflected in their ability to maintain the commitment of attending the program 5 days per week. Lopes et al13 found that patients diagnosed with anxious comorbidities were 82% less likely to drop out of treatment than patients diagnosed only with MDD, and thus posited that patients with high anxiety were more activated and were possibly more motivated to complete treatment than their more anhedonic and unmotivated MDD-only counterparts. In the
present sample, any impairment brought on by higher levels of anxiety may have been offset by increased levels of activation among these patients.

Although anxiety was not associated with treatment dropout rates, gender, age, and education level were—indicating higher rates of dropout among female, younger, and less educated patients. However, effect sizes were small, and these results should not be over-interpreted. Previous findings regarding the associations between gender, age, and dropout rates have been inconsistent.\(^2\)\(^4\) One study that found a greater likelihood of treatment dropout among younger patients suggested that younger people (ie, age <25) are more likely to face external limitations that may affect their ability to stay in treatment, such as a lack of transportation.\(^2\)\(^4\) However, the present study accounted for external limitations in the discharge coding scheme. Previous research has yielded more consistent findings regarding the higher likelihood of dropout among patients of lower socioeconomic status (SES).\(^4\) Although we did not measure all elements of patients’ SES directly, we treated their education level as a proxy. Patients in lower SES brackets may seek psychological treatment only when there is a pressing need to do so, and may be more likely to drop out once the acute crisis has resolved. To address the attrition gap between patients of high and low SES, Barrett et al\(^3\) suggest including elements of motivational interviewing or brief models of treatment for patients in lower SES brackets.

A major strength of this study is that all patients in this sample were diagnosed by highly trained diagnostic interviewers using a structured clinical interview (SCID-IV), which has been shown to be a more reliable diagnostic method than the unstructured clinical interviews typically done in routine clinical practice.\(^2\)\(^5\)\(^2\)\(^6\) There was also relative heterogeneity of the samples with respect to potentially relevant demographic variables (eg, age and educational status). Another strength of this study is that the reasons for discharge were not dichotomously coded (ie, treatment complete or dropout). Most researchers have defined treatment dropout as simply failing to complete treatment once a patient has registered for or commenced treatment.\(^2\)\(^1\)\(^3\)\(^6\)\(^2\)\(^7\) It could be argued that this definition conflates treatment dropouts and treatment non-completers. The distinction between treatment dropouts and treatment non-completers is especially important for more intensive treatment settings. Unlike outpatient settings, PHPs tend to require patients to attend at least 5 to 6 hours almost every day, which presents more potential barriers for continuing treatment (eg, needing to return to work; insurance no longer covering this higher level of care). The way we operationalized dropout allowed us to accurately define groups based on who volitionally discontinued treatment.

Limitations

The present study’s findings should also be interpreted in light of several limitations. Patients were not randomly assigned to treatment conditions, and treatment providers were not blind to patients’ diagnostic profiles. Because clinicians were aware of patients’ baseline anxiety levels, they may have addressed these symptoms early on in treatment, thus mitigating against high anxiety as a risk factor for treatment dropout. Additionally, data on psychotropic medication use were not gathered. If highly anxious patients were more frequently prescribed anxiolytics (eg, benzodiazepines), they may have also experienced an earlier reduction in symptoms that protected against an increased likelihood of dropping out.\(^2\)\(^8\)\(^2\)\(^8\) However, some researchers have found that patients with anxious depression are more likely to experience adverse effects of psychotropic medication compared to non-anxious depressed patients,\(^2\)\(^9\) and that in patients with panic disorder, combined pharmacotherapy and psychotherapy produces more dropouts due to adverse effects than psychotherapy alone.\(^3\)\(^1\) Future studies should take into consideration differences in dropout rates among depressed patients who take anxiolytics and those who do not. Another limitation of this study is that patients were informed about the nature of the program before admission, which may have prompted the most severely anxious patients to not admit to the program in the first place. Future research that investigates the impact of high anxiety on treatment commencement rates at PHPs (ie, the proportion of referred patients who actually begin treatment) is warranted.

CONCLUSIONS

This is the first study that examined anxiety as a potential predictor of dropout among patients seeking treatment for MDD at a PHP. Our findings suggest that no actions above and beyond standard protocol need to be taken to prevent patients with high levels of anxiety from
dropping out of treatment for MDD in a partial hospital setting, although future research that investigates other potential risk factors for dropout in intensive treatment settings is needed. ■

**DISCLOSURES:** The authors report no financial relationships with any companies whose products are mentioned in this article, or with manufacturers of competing products.

**REFERENCES**


