

Triple Vulnerability: Suicidal Ideation, Elevated Anxiety, and Alcohol Consumption and Treatment Engagement in a Partial Hospital Setting

GABRIELA LÓPEZ, PhD; MADELINE N. SIM, BA; SALMA KHSABAHOON, PhD; SARAH SCHMIDHOFER, MD; HANNAH C. HERC, PhD; KRISTY L. DALRYMPLE, PhD

ABSTRACT

OBJECTIVE: Partial hospitalization programs (PHP) are acute psychiatric settings that commonly treat patients with active suicidal ideation (SI), anxiety, and alcohol use. Alcohol use is common among patients with SI and anxiety, and this triple vulnerability may negatively impact treatment engagement and outcomes in PHP. This study examined whether patients presenting with SI, elevated anxiety, and alcohol use (“triple vulnerability”) demonstrated differences in PHP treatment outcomes (completing treatment, number of days attended, number of absences) compared to patients without the vulnerability.

METHODS: Participants were 493 patients admitted to an Acceptance and Commitment Therapy-based PHP program in the United States between 2014-2020. Triple vulnerability was defined as reporting (1) active SI, (2) clinically elevated anxiety (CUXOS-D ≥ 20), and (3) consuming ≥ 1 alcoholic drink on a typical drinking day within the past year. Binary and linear regressions were used to assess differences in treatment completion status, number of days attended, and number of absences.

RESULTS: The triple vulnerability was not significantly associated with treatment completion status or with the number of absences; it was, however, positively associated with the number of days attended at PHP.

CONCLUSION: People who experience SI, clinically elevated anxiety, and who consume at least one alcoholic beverage on a typical drinking day are more likely to attend PHP for a longer duration of time, but are not any more susceptible to not finishing treatment, relative to people who do not have the triple vulnerability. Future work can benefit from exploring additional treatment outcomes that may be impacted by patients with the triple vulnerability.

KEYWORDS: partial hospitalization program; treatment outcomes; suicidal ideation; anxiety; alcohol use

INTRODUCTION

Suicide was the 12th leading cause of death in 2023,¹ with approximately 49,300 suicide deaths. These rates represent a

35% increase over the past two decades.² In addition, about 12.8 million people seriously thought about suicide in 2023.¹ Partial hospitalization programs (PHP) are acute psychiatric settings that commonly treat patients with active suicidal ideation, offering daily intensive group therapy, individual psychotherapy, and psychiatry visits with medication management, while allowing patients to return home each evening. Nearly half of PHP patients report active suicidal ideation on intake.³ The integration of intensive and multimodal therapy distinguishes PHPs as a valuable and common treatment setting for patients with suicidal ideation. Yet, PHPs and their treatment outcomes remain relatively understudied.^{4,5}

Anxiety is prevalent among patients in PHPs and is associated with increased suicidal ideation⁶ and suicide attempts⁷ even when controlling for other mood disorders.⁶ In population-based studies, the presence of anxiety disorders increased the odds of experiencing suicidal ideation and suicide attempts by 2.29 and by 2.48.⁶

Alcohol use is common in patients with suicidal ideation and anxiety. Comorbid alcohol use and anxiety symptoms have been associated with poorer treatment outcomes, less engagement in alcohol use-reduction behaviors, and overall less willingness to participate in treatment.⁸⁻¹¹ These intersecting symptoms may elevate the risk of incomplete treatment within the PHP setting, which relies heavily on daily attendance, group engagement, and participation. Therefore, patients with this triple vulnerability may struggle with less willingness to participate in PHP treatment, putting them at greater risk for early drop-out, missed absences, and increased risk for suicide and rehospitalization. Given that patients with this triple vulnerability do not necessarily have to meet diagnostic criteria for depression, alcohol use disorder, or another anxiety disorder, they may be clinically overlooked due to their lack of comorbid conditions. Despite the fact that they may not meet diagnostic criteria for all three disorders, when all their symptoms are taken together, these three factors may result in a clinical picture that is more difficult to treat than any in isolation. Patients with the triple vulnerability are a vulnerable group, and this exploration is a worthy endeavor given that it might help build awareness into how the triple vulnerability impacts treatment.

The Current Study

The current study aimed to examine whether patients presenting with the co-occurrence of suicidal ideation, clinically elevated anxiety, and recent alcohol use ("triple vulnerability") differed in treatment engagement outcomes in a PHP compared to those without this triple vulnerability. Specifically, we evaluated treatment-completion status, number of days attended, and number of absences. We hypothesized that patients meeting criteria for the triple vulnerability would demonstrate lower rates of treatment completion and reduced program attendance compared to patients without the full triple vulnerability.

METHODS

Treatment Setting/Procedure

Data were collected from consented patients presenting to an Acceptance and Mindfulness-based PHP between April 2014 and March 2020. Treatment was primarily based on Acceptance and Commitment Therapy (ACT) with elements of Cognitive Behavior Therapy and Dialectical Behavior Therapy incorporated as clinically indicated. Patients attended four to five group therapy sessions daily, as well as individual sessions with their therapist and psychiatrist. All patients completed standardized intake measures on their first day of treatment. Patients met daily with their individual therapist, psychiatrist, and attended 3-5 groups. Further treatment schedule details can be found in Terrill, Hubert, Yun, Ingram, Dalrymple.¹²

Participants

Participants were 493 adults admitted to the PHP for treatment who had complete data for all of the study variables. Participants' mean age was 34.76 years ($SD = 12.88$), and 70.8% identified their biological sex as female, 26.4% as male, and 2.8% as "other". Participants reported their race/ethnicity as 74.6% White, 11% Hispanic, 5.1% Black, 1.6% Asian, 1.8% Portuguese, and 5.9% Other. In terms of education, 7.7% did not graduate high school, 18.3% graduated from high school or received a GED, 35.3% completed some college, 23.3% graduated from a 2- or 4-year college program, 5.7% completed some graduate or professional school, and 9.7% completed graduate or professional school. Patients with missing alcohol use, anxiety, or suicidal ideation data were excluded from analyses.

Measures

Suicidal Ideation: Suicidal ideation was measured using a single item from the Remission from Depression Questionnaire (RDQ).¹³ The item asked, "I had thoughts about killing myself" and was rated on a three-point scale (0 = "not at all or rarely true", 1 = "sometimes true", 2 = "often or almost always true") during the past week. Any non-zero endorsement (1 or 2) was coded as "active suicidal ideation."

Anxiety: Anxiety was measured using the Clinically Useful Anxiety Outcome Scale - Daily (CUXOS-D),¹⁴ a 20-item self-reported measure of daily psychic and somatic symptoms of anxiety. Daily symptoms varied from 0 ("not at all") to 4 ("extremely"), with total scores ≥ 20 indicating at least mild anxiety. Scores of 20 or higher on intake or on day 1 of treatment (whichever was available) were coded as "clinically elevated anxiety." The daily version of the CUXOS has strong internal consistency (Cronbach's $\alpha = .93$ at intake), test-retest reliability ($r = .95$ at intake), and high correlation with another measure assessing symptoms of anxiety.¹⁴

Alcohol Use: A single item from the Alcohol Use Disorders Identification Test - Consumption (AUDIT-C)¹⁵ was used to establish the frequency of alcohol use. The item asked, "How many drinks do you have on a typical day when you were drinking in the past year?" and is rated on a Likert scale of "0" = 0 drinks to "5" = 10 or more drinks. This item was only used to identify people with regular alcohol exposure.

Triple Vulnerability: A dichotomous variable was created to represent the presence or absence of the triple vulnerability. Participants were coded as meeting triple vulnerability if they endorsed (1) active suicidal ideation, (2) criteria for clinically elevated anxiety (CUXOS-D ≥ 20), and (3) having 1+ drinks during a typical day of drinking during the past year (AUDIT-C ≥ 1). A total of 143 participants (29%) met triple vulnerability criteria, and 350 did not.

Number of days attended: A continuous variable was created to represent the total number of days of PHP attendance.

Completion status: Patients' completion status was determined by their primary provider (PhD, PsyD or MD), and included the following categories: (1) treatment complete, (2) treatment nearly complete, (3) insurance no longer covering, (4) nonattendance, (5) referred to another program, (6) transferred to inpatient care, (7) withdrew due to external limitations, (8) reported dissatisfaction and withdrew against medical advice, and (9) other. For interpretability, the treatment complete category was renamed to 'completed,' and all other 8 categories (treatment nearly complete, insurance no longer covering, nonattendance, referred to another program, transferred to inpatient care, withdrew due to external limitation, reported dissatisfaction, and other) were collapsed into 'not completed.'

Number of absences: A continuous variable was created representing the total number of days patients were absent from PHP.

Data Analysis Plan

All analyses were conducted using IBM SPSS (Version 31.0). A binary logistic regression was conducted, with triple-vulnerability status as the predictor and treatment completion status (yes/no) as the dependent variable. Additionally, two linear regressions were conducted with triple-vulnerability

status as the predictor and number of days attended at PHP and number of absences as the respective dependent variables. Age and sex were entered as covariates. Descriptive statistics for all study variables among the triple-vulnerability groups vs. people without the triple vulnerability are presented in **Table 1**.

RESULTS

First, a binary logistic regression with treatment-completion status as the dependent variable showed that the model significantly predicted the outcome, ($\chi^2 = 9.24$, $p = .026$, explaining 3% of the variance (Nagelkerke $R^2 = .03$) and correctly classifying 67% of cases. In the adjusted logistic regression model, only age was associated with higher odds of treatment completion (OR = 1.02, 95% CI [1.01, 1.04], $p = .009$). Triple vulnerability and sex were not significantly associated with treatment completion. Second, the linear regression with the number of days attended at PHP as the dependent variable showed the model was significant, $F(3,492) = 4.13$, $p = .007$. The results showed that the triple-vulnerability status was a significant predictor of the number of days attended ($\beta = 0.11$, $t = 2.40$, 95% CI [0.21, 2.20], $p = .017$). Third, the linear regression with number of absences as the dependent variable showed the model was significant, $F(3,492) = 7.13$, $p < .001$. The results showed that the triple-vulnerability status was not a significant predictor of the number of absences ($\beta = 0.03$, $t = 0.68$, 95% CI [-0.21, 0.44], $p = .499$). Only sex was a significant negative predictor in this model, $p < .001$. Sex was coded as 0 = female and 1 = male, indicating that males are less likely to have absences.

DISCUSSION

To our knowledge, this is the first study to examine treatment outcomes (i.e., treatment completion, number of days attended at PHP, number of absences) among patients engaging in a PHP in the Northern United States who reported suicidal ideation, clinically elevated anxiety, and consumed at least 1+ drink on a typical drinking day in the last year. Findings showed that patients who experience the triple vulnerability are more likely to remain longer in treatment relative to patients without the triple vulnerability. Patients did not differ based on treatment completion or number of absences. This study is an important step towards understanding how to improve treatment engagement and outcomes among patients who are at risk for suicidal ideation, elevated anxiety, and alcohol use.

The goal of PHPs is to help stabilize symptoms and improve functioning to help patients transition to a lower level of care. Prior research has indicated that comorbid alcohol use and anxiety symptoms are associated with less willingness to participate in treatment.⁸⁻¹¹ By identifying patients who have these characteristics that may put them

Table 1. Descriptive Statistics for all Study Variables

	Triple Vulnerability N = 143	Control Group N = 350
	N (%)	N (%)
Suicidality		
Not at all or rarely true	0 (0%)	273 (78%)
Sometimes true	64 (44.8%)	43 (12.3%)
Often or almost always true	79 (55.2%)	34 (9.7%)
Alcohol Use		
0 drinks	0 (0%)	143 (40.9%)
1 to 2 drinks	71 (49.7%)	123 (35.1%)
3 to 4 drinks	44 (30.8%)	46 (13.1%)
5 to 6 drinks	17 (11.9%)	21 (1.1%)
7 to 9 drinks	6 (4.2%)	9 (2.6%)
10 or more drinks	5 (3.5%)	8 (2.3%)
Treatment Completion		
Completed	89 (62.2%)	240 (68.6%)
Not completed	54 (37.8%)	110 (31.4%)
	M (SD)	M (SD)
Anxiety	60.31 (19.72)	51.40 (22.84)
Number of Days Attended	8.13 (6.46)	7.24 (4.29)
Number of Absences	1.44 (1.67)	1.41 (1.67)

at risk for premature discharge from PHP or worse treatment outcomes, additional support can be provided to reduce suicidal ideation, anxiety, and alcohol consumption to increase engagement in treatment, and therefore increase the likelihood of positive treatment outcomes. Among patients who did not have the triple vulnerability, approximately 78% did not report active suicidal ideation, which may speak to why those patients attended PHP treatment for a shorter duration. Additionally, it may be worthwhile to explore in more depth why men with the triple vulnerability, in particular, were less likely to have absences from PHP treatment compared to women.

Surprisingly, the triple vulnerability did not impact treatment completion and instead only resulted in patients with the triple vulnerability being more likely to attend for more days relative to those without the vulnerability. The clinical relevance of identifying the triple vulnerability is highlighted by the fact that the patients required a longer PHP course of treatment, even when not meeting full diagnostic criteria for any single disorder. Although the difference between an average of 8.13 versus 7.24 days [Table 1] may be modest, and cannot alone establish clinical significance in terms of symptom stabilization, it is important to note that each additional day in an intensive treatment environment, such as PHP, may carry clinical relevance as it relates to readiness for step-down to outpatient care. Specifically,

a longer stay in PHP can indicate that a patient has not yet reached the clinical stability that affords a safe step-down to outpatient care, as this threshold is examined on a daily basis by clinicians in order to help patients return to a lower level of care as soon as possible. This also has practical implications for discharge planning, in terms of identifying an outpatient care team, which can take time, communicating with an existing care team, and ensuring appropriate outpatient supports. Patients with the triple vulnerability may benefit from initiating discharge-planning discussions earlier in their admissions to ensure timeliness before discharge. PHP and its treatment outcomes remain relatively understudied,^{4,5} and future research in this treatment setting is indicated to determine what each additional treatment day confers in terms of post-discharge functioning.

There may be several other reasons why patients with the triple vulnerability had a longer treatment duration (by an average of about one day), and these reasons are speculative as they were not directly tested in this study. Possible explanations could be that they needed it due to increased severity, that their clinicians recommended a longer duration of treatment, that the PHP did not specifically address their alcohol use, or that they were more willing to remain in treatment until they completed their treatment. It is also possible that due to the triple vulnerability, day-to-day engagement was less, resulting in the need for more total days to complete the treatment. Clinicians may benefit from awareness that patients with the triple vulnerability may stay longer in PHP treatment. They may also encourage patients to make efforts to increase their engagement, which could make their treatment stay more efficient (i.e., resulting in a shorter length of stay that is optimized by having fewer absences during the length of stay). Clinicians may also consider discussing treatment engagement generally with patients and making adjustments to the patient's treatment plan based on the patient's needs. For example, if a patient with the triple vulnerability is reporting that they are having a difficult time engaging in group therapy, the clinician can work with them to approach engagement using emotion regulation, self-compassion, and distress-tolerance skills, instead of disengaging and avoiding others and the group leader. Clinicians may also benefit from revisiting the patients' values and goals in seeking treatment, and aim to increase their motivation to commit to action and change.

Future work may benefit from conducting PHP exit interviews with patients to examine their perspectives on treatment duration, and whether they may benefit from changes to help increase engagement. Although not directly assessed in the study, it would be worthwhile to explore why their treatment duration was statistically significantly longer. Interviews could also examine what motivated patients with the triple vulnerability to remain in treatment until completion. Findings could have important implications for policy. For example, if findings suggest that patients are engaged

with treatment and they are still having longer PHP stays, this would support that people who carry this vulnerability may require a longer treatment duration (and this work can be cited in support of the need to request longer treatment to insurance companies if they are declining extended time at PHPs). Additionally, future work can also examine whether patients who have the triple vulnerability will have improved treatment outcomes if they participate in a PHP 'co-occurring track' that is specific to people who are also consuming substances, vs the general PHP track, which is not specific to substance use. Co-occurring mental health and substance use tracks at PHP specifically aim to address issues specific to substance use and may be better suited for patients with the triple vulnerability.

The current study highlights a higher-risk population that may benefit from additional targeted psychoeducation related to the manner in which symptoms maintain one another. Because patients with the triple vulnerability do not necessarily meet full diagnostic criteria for a DSM-5 disorder, they are more likely to fall through the cracks clinically, and may not be flagged as higher risk with traditional screening tools. The current study findings suggest that this combination, even when sub-diagnostic threshold, warrants clinical attention, given that it is associated with a longer treatment course. If PHP patients are screened for the triple vulnerability, clinicians may monitor their treatment adherence closely. They can also assess treatment engagement as well as their tendency to practice acquired ACT-based skills after program hours. A potential lower-cost method for accomplishing this could be through the use of digital interventions to assess these variables in a non-obtrusive and private manner, and provide additional skills' practice outside of program hours.

Limitations

The treatment setting of this study is a major strength. However, this study is not without limitations. First, alcohol-use measures were not collected from the entire sample (since PHP started), and as such, our sample size was significantly reduced due to a lack of AUDIT-C information for many PHP patients. Relatedly, we did not explicitly assess for daily alcohol use or for alcohol-related consequences, which would provide rich data for understanding alcohol use frequency and risk for serious consequences. Second, the study was conducted among patients in a PHP setting and thus may not generalize to less acute patient populations, such as outpatient treatment settings. Third, many of the independent variables, such as suicidality, anxiety, and alcohol use, are based on self-report and thus are subject to social desirability (e.g., underreporting or overreporting). It is possible that patients did not fully report their symptom severity due to social desirability. Lastly, suicidal ideation was assessed using a single self-report item, which may limit the ability to capture variability in ideation severity over time.

CONCLUSIONS AND FUTURE DIRECTIONS

Study findings indicate that patients who report active suicidal ideation, elevated symptoms of anxiety, and consume 1–10+ drinks on a typical drinking day in the last year are more likely to remain in treatment longer relative to patients who do not have this vulnerability. Future research may benefit from continuing to examine this triple vulnerability longitudinally, to further understand how PHP treatment duration impacts patients' symptoms after discharge (longer term). Whereas the triple vulnerability did not have an impact on two treatment outcomes observed in this study (treatment completion, number of days absent), it is possible that it can have an impact on other treatment outcomes, such as engagement in outpatient therapy, changes in suicidal-ideation severity, and inpatient hospitalization or PHP readmission. Longitudinal work would be an ideal methodology to track patients who discharge from PHP care, and assess their symptom trajectory following the completion/termination of their care.

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Authors

Gabriela López, PhD, Department of Psychiatry and Human Behavior, The Warren Alpert Medical School of Brown University; Department of Adult Psychiatry and Behavioral Health, Rhode Island Hospital, Providence, RI.

Madeline N. Sim, BA, Department of Psychiatry and Human Behavior, The Warren Alpert Medical School of Brown University; Department of Adult Psychiatry and Behavioral Health, Rhode Island Hospital, Providence, RI.

Salma Khshaiboon, PhD, Department of Psychiatry and Human Behavior, The Warren Alpert Medical School of Brown University; Department of Adult Psychiatry and Behavioral Health, Rhode Island Hospital, Providence, RI.

Sarah Schmidhofer, MD, Department of Psychiatry and Human Behavior, The Warren Alpert Medical School of Brown University; Department of Adult Psychiatry and Behavioral Health, Rhode Island Hospital, Providence, RI.

Hannah C. Herc, PhD, Department of Psychiatry and Human Behavior, The Warren Alpert Medical School of Brown University; Department of Adult Psychiatry and Behavioral Health, Rhode Island Hospital, Providence, RI.

Kristy L. Dalrymple, PhD, Department of Psychiatry and Human Behavior, The Warren Alpert Medical School of Brown University; Department of Adult Psychiatry and Behavioral Health, Rhode Island Hospital, Providence, RI.

Disclosures

Funding: Dr. López's efforts on this publication were supported by the National Institute on General Medical Sciences (P20GM130414, PI Monti).

Author Note: Study procedures were approved by the Rhode Island Hospital IRB. Study participants consented to the study protocol. Participants did not consent to data sharing. As such, authors elected not to share data.

Conflicts of interest: Authors have no conflicts of interest to disclose.

Correspondence

Gabriela López, PhD
Department of Psychiatry and Human Behavior
The Warren Alpert Medical School of Brown University
146 West River, Suite 11B
Providence, RI 02904
401-863-5502
Gaby_Lopez@brown.edu