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Cover Page Footnote

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ABSTRACT

Recovery capital refers to the internal and external resources available to support an individual in their recovery from substance use disorders. Using data from an ongoing trial, the current study examined recovery capital among 225 individuals initiating office-based buprenorphine treatment for opioid use disorder (OUD) at Federally Qualified Health Centers in the mid-Atlantic region. At baseline, participants completed the Brief Assessment of Recovery Capital-10 (BARC-10), a validated measure assessing the 4 major domains of recovery capital, and completed a urine toxicology screening. Participants reported BARC-10 scores of 49.22 on average ($SD = 8.14$). Average scores were highest for the item "I take full responsibility for my actions," ($M = 5.77, SD = .52$), and lowest for "I am proud of the community I live in and feel a part of it" ($M = 4.07, SD = 1.73$). Lower recovery capital scores were associated with providing a urine screen suggestive of substance use, $r(224) = -.16, p < .05$ and reporting depression ($B = -.06, p = .001$) or anxiety ($B = -.05, p < .05$) in the past 30 days. By screening for recovery capital in individuals with OUD, providers may be able to more effectively tailor individuals' behavioral treatment plans to positively impact their treatment outcomes.

Keywords: opioid use disorder, mental health, integrated behavioral health

INTRODUCTION

According to the Centers for Disease Control (CDC, 2022), 2.7 million people in the United States live with opioid use disorder (OUD). Individuals with OUD often

experience a range of varied and complex psychosocial stressors, including comorbid mental illnesses and chronic physical health conditions (SAMHSA, 2023), homelessness (US Department of Housing and Urban Development, 2019) and unemployment (Rhee &

Rosenheck, 2019). These stressors can contribute to challenges in achieving recovery-related goals and sustaining recovery.

Individuals with OUD experience high rates of comorbid mental health disorders (National Institute on Drug Abuse, 2020), including, most prevalently, anxiety and depression (Santo Jr. et al., 2022). A study by Martins and colleagues (2009) found a bi-directional pathway of association between opioid misuse and psychiatric disorders, further supporting the correlation between these two conditions. Given these associations, screening and treatment for mental health conditions such as anxiety and depression may contribute to sustained success in recovery.

Recovery capital refers to an individual's internal and external resources that allow them to begin and maintain recovery from substance use disorders (White & Cloud, 2008.) Domains of recovery capital include 1) *personal*: physical health, access to housing, clothing, food, and health insurance, values and knowledge, self-awareness, esteem, and efficacy, and interpersonal skills; 2) *family/social*: family and social relationships; 3) *community*: treatment resources and recovery support institutions such as recovery homes and ministries, employee and professional assistance programs; and 4) *cultural*: availability of culturally-sensitive recovery resources (White & Cloud, 2008). Research by Laudet & White (2008) has demonstrated that higher recovery capital scores are associated with greater length of sustained recovery and improved quality of life in polysubstance users; however, less is known about how recovery capital relates to clinical outcomes in individuals with OUD specifically. In one study of individuals taking buprenorphine for OUD, Parlier-Ahmad and colleagues (2021) found that, while recovery capital scores were high for individuals receiving medication for opioid use disorder (MOUD), factors such as gender and experiencing discrimination in a healthcare setting were associated with lower recovery capital scores. Additionally, Bormann and colleagues (2023) found recovery capital scores to be positively associated with past-30-day abstinence in a sample of individuals beginning treatment for OUD.

MOUD is recommended for use in conjunction with psychosocial treatment and is increasingly available in

outpatient, office-based settings including primary care (SAMHSA, 2022). Therefore, there is a need to efficiently assess recovery-related strengths and weaknesses to effectively tailor and guide psychosocial treatment in office-based practices offering MOUD. The present study examined recovery capital as measured by the Brief Assessment of Recovery Capital-10 (BARC-10; Vilsaint et al., 2017) among adults initiating MOUD treatment at Federally Qualified Health Centers (FQHCs). Specifically, the aims of this study were to 1) examine levels of recovery capital overall and within each domain; and 2) to explore the relationship between recovery capital and clinical profiles (illicit drug screening results, current depression and anxiety) in individuals with OUD who are initiating buprenorphine treatment in an office-based, outpatient care setting.

METHODS

Participants

Two-hundred and twenty-five adults (age 18 or older) with OUD initiating office-based buprenorphine treatment at one of five FQHCs in Eastern Pennsylvania and New Jersey participated in this study. Participants were enrolled in an ongoing randomized, controlled trial assessing the comparative effectiveness of two adjunctive psychosocial treatments (i.e., peer support and cognitive-behavioral therapy) for individuals beginning office-based buprenorphine treatment. Recruitment for the current sample spanned the period of July 2020 through December 2022.

Individuals were eligible to participate if they were new to office-based buprenorphine treatment (defined as treatment initiation in the past four weeks), had an active diagnosis of OUD, and did not have psychiatric or cognitive impairments that would prevent them from providing informed consent (i.e., not intoxicated or a danger to themselves or others). FQHC staff and providers identified potentially eligible individuals; interested individuals were then screened for eligibility by study staff and completed the informed consent process. After providing consent, participants completed a urine drug screen for illicit substances and a baseline structured clinical interview including the BARC-10. Participants were compensated \$50 for their participation. The study protocol was approved by the lead institution's Institutional Review Board (H19-047).

Measures

Demographics, Depression and Anxiety

Demographic data (age, race, ethnicity, gender identity, employment, education, and legal history) and depression (Have you had a significant period of time in which you have experienced serious depression?) or anxiety (Have you had a significant period of time in which you have experienced serious anxiety or tension?) in the past 30 days were collected using the Addiction Severity Index-Lite (ASI-Lite), a validated measure of present and lifetime psychosocial functioning across seven domains (McClellan et al., 2007).

Recovery Capital

At baseline, participants completed the BARC-10, a validated measure of recovery capital for individuals with substance use disorders (Vilsaint et al., 2017). The BARC-10 uses a six-point Likert-type scale to assess ten domains of recovery capital: substance use and sobriety, global psychological health, global physical health, citizenship and community involvement, social support, meaningful activities, housing and safety, risk-taking, coping and life functioning, and recovery experience. Scores from the ten domains are summed to a total score. Based on data from a previous validation study, composite BARC-10 scores of ≥ 47 are associated with an increased likelihood of sustained recovery for > 1 year (Vilsaint et al., 2017).

Drug Screening

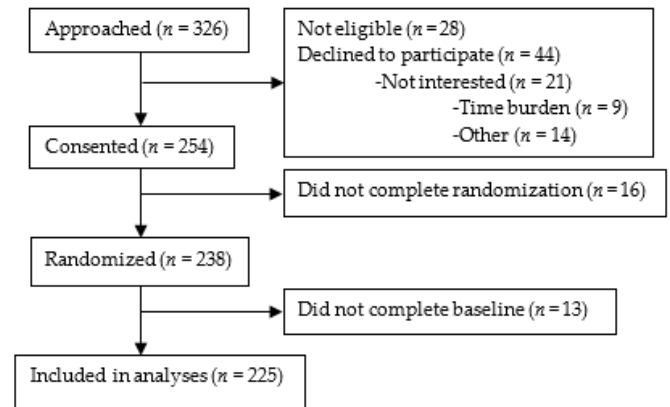
Participants completed a 14-panel urine drug screen (UDS; Identify Diagnostics 14-Panel Test Cup) and a urine fentanyl test strip for illicit substance use at the time of the baseline assessment, which occurred within four weeks of the initiation buprenorphine treatment provided in an outpatient, office-based setting. Positive substance use results were not considered illicit if participants had a prescription for use (e.g., buprenorphine, benzodiazepine) or for tetrahydrocannabinol (THC) with a valid physician-approved medical marijuana card; cannabis use without a valid card was designated as illicit.

Statistical Considerations

At the time of the current analysis, 326 individuals were approached about the study. Of these individuals, 254 (77.19%) consented and 225 (69.02%) were enrolled and

included in these analyses (Figure 1).

Figure 1: Participant Flow.



Descriptive statistics (means, standard deviations, frequencies) were used to characterize the sample and BARC-10 item responses. Gender identity was categorized as a binary outcome (male = 0, female = 1); one transgender female participant was included as female in analyses. Correlations between demographic characteristics (gender identity, age, race and ethnicity) and key study outcomes (BARC-10 total score, urinalysis, anxiety, depression) were conducted; characteristics found to be significant were included in relevant regression analyses. BARC-10 scores were evaluated as a predictor in binary logistic regression analyses of current depression (no/yes), current anxiety (no/yes), and baseline urinalysis result (positive/negative for any of the 15 substances tested, excluding excused prescribed medications/buprenorphine and physician-recommended THC). Significance was determined using a p-value of <0.05 .

Data were analyzed using SPSS version 24.0 (IBM, Inc.). Outcomes were evaluated for multicollinearity and outliers prior to analyses. Data were complete for 99.5% of outcomes and therefore no strategies to account for missing data were employed.

RESULTS

Table 1 reports the demographic characteristics of the sample; participants were predominantly male (69%), White (46%) and non-Latino/a/x (75%) and were a mean age of 46.23 ($SD = 11.16$) years old. Gender identity

significantly correlated with BARC-10 total score ($r = -0.12, p = 0.04$) and urinalysis results ($r = 0.17, p = 0.01$) and was included in relevant models. Age, race, and ethnicity did not correlate with urinalysis results, current depression, or current anxiety, $p > .05$ for all. Participants reported a mean monthly income of \$451.95, with 28.4% experiencing unemployment and 41.3% utilizing one or more welfare services.

Table 1: Characteristics of Participants with Opioid Use Disorder (N = 225)

	M	SD	n	%
Age (years)	46.23	11.16		
Gender identity				
Male			156	69
Female			68	30
Transgender			1	<1
Race				
Black			63	28
White			104	46
Other*			58	26
Ethnicity				
Hispanic/Latin o/a/x			56	25
Drug-positive urine screen			129	57

*Participants may have reported more than one condition; race “other” included Asian/Pacific, American Indian, Alaskan Native

The mean composite BARC-10 score was 49.22 ($SD = 8.14$), with 68.4% scoring ≥ 47 . Participants reported the highest mean scores for the recovery capital item “I take full responsibility for my actions” ($M = 5.77, SD = 0.52$) and the lowest mean scores for the recovery capital item “I am proud of the community I live in and feel a part of it” ($M = 4.07, SD = 1.73$). Mean scores for other BARC-10 items can be found in Table 2.

Table 2: Brief Assessment of Recovery Capital (BARC-10) Individual Item Scores (N = 225)

BARC-10 Item	M	SD
There are more important things in life to me than using substances.	5.74	0.71
In general, I am happy with my life.	4.20	1.63
I have enough energy to complete the tasks I set for myself.	4.72	1.48
I get lots of support from friends.	4.28	1.78
I regard my life as challenging or fulfilling without the need for using drugs or alcohol.	5.05	1.42
My living space has helped me drive my recovery journey.	4.67	1.62
I am happy dealing with a wide range of professional people.	5.51	0.89
I am making good progress on my recovery journey.	5.40	1.02

Of the 225 individuals included in these analyses, 56.4% had a positive urine drug screen for a non-prescribed substance. The most common substances were illicit marijuana/THC (28.0%), opioids (19.6%), and cocaine (16.0%). Mean recovery capital scores were inversely associated with positive urine drug screen results for one or more illicit substances at baseline, $B = -0.04, p = 0.04$, Table 2.

In the sample at baseline, 35.6% endorsed experiencing serious depression in the past 30 days, and 60.0% endorsed serious anxiety in the past 30 days. Higher recovery capital scores were associated with decreased likelihood of past 30-day depression ($B = -0.06, p = 0.001$) and anxiety ($B = -0.05, p = 0.004$), Table 3.

Table 3: BARC-10 Total Scores as a Predictor of Clinical Variables in Participants with Opioid Use Disorder (N = 225)

	<i>Multivariate*</i>				
	<i>B</i>	<i>S.E</i>	<i>Exp(B)</i>	<i>Wald</i>	<i>p</i>
Positive urine drug screen (UDS)	-.04	.02	.96	4.18	.03
Depression (past 30 days)	-.06	.02	.94	11.52	.001
Anxiety (past 30 days)	-.05	.02	.95	8.22	.004

*Binary logistic regression; gender identity was included in UDS analyses

DISCUSSION

In this prospective study of individuals with OUD presenting for MOUD in office-based settings, higher recovery capital was associated with better mental health functioning and a lower likelihood of illicit substance use. Findings from this study are consistent with previous studies indicating that lower recovery capital relates to substance use problem severity (Lyons & Lurigio, 2010). Current data shows that among individuals with OUD, 36.1% report a diagnosis of depression, and 29.1% report a diagnosis of anxiety (Santo et al., 2022). Given the limited assessments conducted in this study, future studies may benefit from utilizing more comprehensive measures of symptom severity and complexity for these conditions to examine how the relationships between these variables change over time.

The study sample was recruited from FQHCs, which are outpatient health centers designed to serve any individual seeking treatment, including Medicare/Medicaid or uninsured and very low-income patients. Overall, 68.4% had recovery capital scores that were equal to or exceeded the threshold identified as predictive of sustained remission for at least one year by Vilsaint et al. (2017). While this is promising, it means that one-third of the sample scored below this cutoff. Notably, participants displayed the lowest ratings for

the item “I am proud of the community I live in and feel a part of it.” This may be a reflection of the isolation and separation that can accompany living with SUDs, or of feeling disconnected from community because of homelessness, joblessness, living in poverty, or the ongoing social isolation of the COVID-19 pandemic. Integrated primary care practices and other multidisciplinary office-based practices providing MOUD treatment and other types of recovery services could utilize recovery capital profiles to guide psychosocial treatment planning, including utilizing peer support, community- and group-based models, and partnerships with other clinical programs. Working to strengthen recovery capital domains may help to maximize a person’s chances of success in meeting their recovery-related goals. Future studies should continue to evaluate how using recovery capital to tailor psychosocial treatment approaches may impact not only clinical treatment outcomes, but also treatment satisfaction and engagement in care.

Finally, participants with OUD rated “I take full responsibility for my actions” as the highest recovery capital item, which is an item assessing one’s internal capital. In a study by Schoenfeld and colleagues (2022), participants with OUD discussed the vital importance of “readiness” for change in deciding to begin MOUD and in achieving recovery success. While participants in this qualitative study noted a variety of factors associated with readiness (e.g., family or friends, finding a provider they connected with, shared recovery stories from peers), the majority noted that overall, internal motivation was paramount to sustained recovery. It is possible that participants in the current study rated taking responsibility highly because they had reached the threshold of readiness to initiate MOUD treatment. Providers may capitalize on areas of strength within recovery capital to maximize treatment outcomes.

Though several studies have failed to find a relationship between OUD treatment retention and the treatment of mental health comorbidities (Hooker et al., 2020; Biondi et al., 2022), screening for and treating mental health comorbidities in individuals receiving MOUD continues to remain an important healthcare priority. However, an additional need exists to determine how assessments such as the BARC-10 may provide information above and beyond mental health screening to inform strategies

that can maximize treatment retention.

This study had several strengths. We utilized a sufficient sample size, a validated measure of recovery capital, and recruited a racially diverse sample (28% Black, 25% Latino/a/x). Study findings, however, are limited by the fact that participants were recruited from only one geographic region, minimizing the generalizability of these findings to patients from other areas. In addition, the study was based on a single time point reflecting status and functioning when clients initiated office-based buprenorphine treatment. Future studies may benefit from utilizing more geographically diverse samples and employing longitudinal designs.

In conclusion, measuring recovery capital in the context of office-based MOUD treatment may help providers treat the “whole patient,” and potentially maximize recovery-related outcomes and treatment engagement.

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