ORIGINAL RESEARCH

The Road to Reintegration: Evaluating the Effectiveness of VA Healthcare in Vocational Rehabilitation and Employment Retention for Veterans with Mental Health and Substance Use Disorders

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Introduction: Veterans diagnosed with mental health and/or substance use disorders (SUD) often face significant barriers to employment and reintegration into civilian society. In the current study, we investigated whether how the VA healthcare system for mental health and/or SUD treatment predicted program enrollment into vocational rehabilitation, simultaneous mental health and/or SUD treatment while enrolled in vocational rehabilitation predicted employment at discharge, and mental health and/or SUD treatment continues and employment remain 60-days-post-vocational-rehabilitation discharge.

Methods: An outcome-based, summative program evaluation design to measure quality assurance of vocational rehabilitation services provided to 402 veteran patients enrolled in a VA healthcare located within the Great Lakes Health Care System – Veterans Integrated Services Network.

Results: Multivariable logistic regression analyses showed psychological empowerment (confidence in one's ability to work or find work) is a significant factor determining whether a veteran is enrolled in the vocational rehabilitation program, prior mental health treatment (yes/no) and frequency of mental health treatment did not predict program enrollment, and frequency of SUD VA system treatment 60 days prior did not predict program enrollment. Other findings showed that simultaneous mental health and/or SUD treatment while enrolled in vocational rehabilitation did not predict employment at discharge, and employment at discharge did not predict continued mental health and/or SUD treatment post-discharge from vocational rehabilitation. However, veterans with both SUD and mental health and continued mental health treatment were less likely to be employed.

Conclusion: Utilization of real-world program evaluation data from an actual VHA vocational rehabilitation program enhances the study's ecological validity, offering practical implications for policymakers and practitioners in the field. The findings support the importance of veterans enrolling in mental health and/or SUD treatment simultaneously while enrolled in vocational rehabilitation services, as integrating vocational rehabilitation with mental health and SUD treatment services can lead to improved vocational and health outcomes for veterans (eg, development of targeted interventions to support veterans' successful reintegration into the workforce and society).

Keywords: substance use disorders, mental health, veterans affairs, health administration, veterans, vocational rehabilitation, treatment access

Introduction

Veterans with psychiatric and/or substance use disorders (SUD) may experience an increase in homelessness, a lack of social support, military-to-civilian transition problems, and high unemployment rates.[1–4] Within Veteran Affairs (VA) Medical

107

Centers, interventions to reduce these barriers include mental health and substance use disorder (SUD) treatment, vocational rehabilitation, medical care and services, and homeless veteran care.[1,5–7] Yet, challenges exist with treatment access, compliance, and results. Despite major attempts to engage in continuous program improvement, 17.7% of veterans with substance use disorders,[8] 65% of veterans with psychiatric disorders,[2] and 97.4% of veterans with both psychiatric disorders and SUDs[9] are unemployed, whereas unemployment rates for veterans and civilians without these diagnoses are 2.4% and 7.5%, respectively.[10,11] Furthermore, co-occurrence between SUD and mental health can cause complexity due to the communication between the two.[12] Research shows a diagnosis maybe mask for the other, which can be a challenge not only for the individual but for the healthcare provider making a correct diagnoses and treatment plan.[13] These high prevalence rates indicate that mental health and SUDs will continue to be significant obstacles when supporting veterans in their quest for self-sufficiency or independence and reintegration into civilian society.

SUDs have been characterized as a condition of uncontrolled use of substances despite harmful consequences, whereas mental health disorders can be characterized as a clinically significant disturbance (eg, cognitive, emotional regulation, or behavior) that leads to dysfunction in the psychological, biological, or development processes that underline mental functioning.[14] It has been shown that mental health diagnoses and/or SUDs, as well as the receipt of treatment for these illnesses, play significant roles in enrollment in vocational rehabilitation programs within the Veteran Health Administration (VHA) system.[15] Although research examining mental health and/or SUD treatment occurring concurrently with vocational rehabilitation within VHA is limited, one study found that veterans with active alcohol use disorders (ie, use within the last 3 months according to the American Psychiatric Association DSM 5 TR[14] severity rating criteria) and co-occurring depression, anxiety, post-traumatic stress disorder, or bipolar disorder were less likely to enroll in vocational rehabilitation.[15] Other research has examined the efficacy of VHA vocational rehabilitation, in which veterans with mild traumatic brain injury (TBI) and mental illness received a cognitive rehabilitation intervention (which did address mental health concerns) embedded within vocational rehabilitation services; and were then compared to a control group.[3] Veterans who received the embedded intervention obtained competitive employment at a rate which was double that of the control group worked more than twice as many total days, worked nearly three times as many hours, and earned an average of $5000 more per year than the control group. Earlier research analyzed 529 veterans being treated in a drug and alcohol partial hospitalization program for SUD.[16] These individuals also participated in a work therapy program, and it was determined that they were significantly more likely to return to work and be considered "successful". There may be a paucity of research that specifically examines concurrent/integrated vocational rehabilitation and mental health/SUD services for veterans, but researcher and scholar recommendations for these integrated services abound, as such services can lead to outcomes such as higher employment rates[16] and completion of drug and alcohol treatment.[4]

Understanding that recovery from SUDs and/or certain mental health diagnoses is, for many, a lifelong process and that long-term treatment engagement can be predictive of greater overall well-being, several studies have examined the effect of employment on continued mental health or SUD treatment. For instance, among the more than 29,000 veterans with mental health and SUDs who were discharged from VHA employment services between 2006 and 2010, employment predicted less healthcare utilization one and five years later.[1] There were fewer outpatient mental health visits, a lower likelihood of mental health hospitalizations, fewer mental health stays, and fewer medical hospitalizations. On the one hand, sustained treatment can be viewed as advantageous, while on the other hand, reduced treatment engagement following employment can be indicative of veterans' improved well-being and reduced need for such services.[1,4,7,15] Thus, the findings of Abraham et al can be considered positive.

Other scholars, however, would argue that many returning veterans with mental health and/or SUD problems may have difficulty maintaining their employment and that their symptoms of SUD, and depression, may negatively impact their work performance and put them at risk for job loss, necessitating ongoing treatment.[17] Therefore, while a decrease in mental health / SUD treatment participation among employed veterans may be indicative of well-being, sustained treatment is frequently recommended. Since the 1980s, it has been widely believed that employment impacts treatment outcomes and can be a crucial "ingredient" for treatment adherence.[16] Employment is associated with treatment adherence and recovery maintenance, as well as reduced lifetime rates of SUD and co-occurring mental health conditions, and a higher quality of life, according to previous research.[8]

Literature suggests that employment is a significant predictor of treatment adherence among individuals with SUDs.[18] In addition, existing research indicates that combining vocational rehabilitation (or employment services) with mental health

and/or SUD treatment results in marginally better vocational and health outcomes[19] and an increased likelihood of obtaining part-time and full-time jobs.[20] There is substantial research support and consensus on the positive effects of employment for people with mental health and/or SUDs.[21–27] While research has shown that 64% of Veterans have access to mental services and sought to use the VA for that care,[28] research has not yet examined "why" veterans do not enroll in specialty services (eg, vocational rehabilitation) when referred by their mental health or SUD providers. Although studies have begun to explore disparities in vocational rehabilitation program enrollment and employment at discharge rates for veterans receiving services within the VA healthcare system,[4,7,15] attention has not been given to whether (1) mental health and/or SUD treatment 60 days prior to the initial consult appointment predict program enrollment into vocational rehabilitation, (2) simultaneous mental health and/or SUD treatment while enrolled in vocational rehabilitation predicted employment at discharge, and (3) did employment at discharge from vocational rehabilitation predict continued mental health and/or SUD treatment for veterans with mental health disorders and/or SUDs. Examining these relationships will allow researchers, clinicians, and policymakers to better understand the potential benefits for individuals seeking recovery and enhanced vocational and overall well-being. Subsequently, the following research questions guided the current study:

Research Question #1: To What Extent Do Demographic Variables (eg, Mental Health and/or SUD Diagnosis, Age, Homelessness status) Predict Program Enrollment into VA Healthcare Vocational Rehabilitation After a Consult for Services is Placed?

Research Question #2: To What Extent Does Prior Mental Health or Substance Use Treatment before Consult (60 days prior) Predict Program Enrollment into VA Healthcare Vocational Rehabilitation for Veterans with Mental Health or SUD Diagnoses?

Research Question #3: To What Extent is Employment at Discharge from Vocational Rehabilitation Predicted by Concurrent Mental Health and/or Substance Use Treatment Enrollment and Frequency of Sessions (Group or Individual) for Veterans with Mental Health and/or SUD Diagnoses?

Research Question #4: To What Extent Does Employment Status Predict Continued Treatment for SUDs and/or Mental Health Disorders Post-Discharge from Vocational Rehabilitation?

Methods

Participants

The Veteran Affairs (VA) medical centers are organized into 18 Veterans Integrated Services Network (VISN) regional systems of care that collaborate to provide high-quality localized care and improve access to services.[29] In this evaluation study, existing data from 402 veterans referred or enrolled in Fiscal Year 2023 (October 1, 2022 – September 30, 2023) to a vocational rehabilitation program within VISN 12 (VA Great Lakes Health Care System) were examined.

The majority identified as male (n = 366; 91.0%), while 8.5% identified as female (n = 34) and 0.5% identified as transgender (n = 2), respectively. The average age of the veterans was 48.64 years (standard deviation = 13.21). In terms of racial composition, most veterans identified as White non-Hispanic (n = 288, 71.6%), while 21.6% of the sample (n = 87) were Black or African American veterans. Upon program referral or entry into the vocational rehabilitation program, 27.1% of the sample reported being homeless (n = 109), 10.5% had a criminal background with a felony conviction (n = 42), and 2.7% had a history of military or civilian sexual assault (n = 11). These demographic details provide a comprehensive overview of the veteran patients included in the study and serve as the basis for further examination and analysis of program outcomes.

Data Source & Procedures

The Institutional Review Board (IRB) of the US Department of Veterans Affairs exempted the current study because it was conducted as a quality assurance initiative and not as a research project (QI/QA determination protocol approval no. 1641949–1). In addition, secondary approval was obtained from the academic institution of the second author (approval no. 13460). As part of the programmatic evaluation of the VR program, data were gathered to analyze trends and identify areas for service-delivery enhancement to improve participant access and outcomes. The information was

gathered from Veteran patients enrolled and 2023 via initial intakes conducted by VR counselors. The data was then analyzed and entered into a Microsoft Access[TR] database. All participants provided informed consent, in accordance with the Declaration of Helsinki.

The primary author reviewed the computerized patient record system (CPRS), which tracks VA hospital-level medical information, and the joint legacy viewer (JLV), which compiles medical information from all VA medical centers where care was provided, to ensure the accuracy of the information. These reviews were conducted to confirm the accuracy of the recorded data and to obtain additional information regarding prior, current, and post-discharge SUD and mental health treatment, including session frequency. In addition, the primary author cross-referenced the CPRS and JLV problem list, in addition to medical records and progress notes, to confirm the accuracy of mental health and SUD diagnoses (note: diagnosis provided by Psychiatrist or Psychologist per the American Psychiatric Association [2022] DSM 5/ DSM 5-TR) per study participant. This exhaustive verification procedure was designed to ensure the accuracy and validity of the data used for analysis.

Materials

The Employment Hope Scale (EHS) was initially developed in the United States by studying job-training program participants and service providers.[30] This scale measures employment hope across six dimensions, which are organized into two higher-order constructs: (1) psychological empowerment, which includes self-worth, self-perceived capabilities, and future outlook; and (2) the process of moving toward future goals, which includes self-motivation, skill utilization, and goal orientation. Each category's maximum score is six points. Greater employment optimism is indicated by higher scores on both the primary constructs and the six dimensions (with a maximum average score of 10). With a reliability coefficient (Cronbach's alpha) of 0.832, the full-scale instrument demonstrated good internal consistency. The Perceived Barriers to Employment Scale (PEBS) is a 5-factor, 20-item scale that measures an individual's perception of factors that are barriers to obtaining employment.[30] Veterans were asked to indicate the degree that which each item (eg, alcohol drug/alcohol addiction, domestic violence, childcare, lack of support system) is a barrier to employment, and lower scores indicate the item is less of a barrier/not a barrier. The Employment Readiness Scale[TM] (ERS) is a 85-item instrument that measures three factors (ie, employability factors, soft skills, and challenges) determining an individual's level of work readiness.[27] With a reliability coefficient (Cronbach's alpha) of 0.630, the full-scale instrument demonstrated good internal consistency.[31]

Data Analysis

This study examined the impact of mental health and/or SUD treatment on two crucial aspects: (1) program enrollment and (2) employment upon discharge. To isolate the influence of certain variables and to answer our research questions, a hierarchical logistic regression procedure was used to determine how predictor variables affected the dichotomous outcome variable. The hierarchical regressions enter the predictors in blocks. Each block represents one step (or model). There were five blocks (models) for the logistic regression. These blocks included 1) age, race, and gender; 2) block (1) + homeless status and felony; 3) block (2) + psychologic diagnosis and SUD and mental health treatment before the initial consult appointment; 4) block (3) + SUD and mental health treatment sessions 60 days before referral and Employment Hope Scale score; 5) all variables from the previous blocks. For the outcome of employment at discharge from vocational rehabilitation, three blocks were included. They were 1) SUD and mental health treatment before the initial consult appointment; 2) block (1) + SUD and mental health treatment sessions 60 days before referral; 3) block (2) + age, race, gender, homeless status, felony, and EHS score. We used Nagelkerke's R2 score to see how well a logistic regression fits the data and explain if the predictor variables contributed meaningfully to the prediction of the outcome variable. With a score range of 0 to 1, values closer to 1 indicate a better fit of the model.[32]

Variables that significantly predicted the outcome variable within each regression model, we examined odds ratio (OR) and its confidence intervals (95%), which is used to quantify the strength and direction of the association between the two variables (eg, comparing the odds of enrolling for vocational rehabilitation services given whether the veteran was engaging in mental health and/or SUD treatment before their initial consult appointment with their vocational rehabilitation counselor). The receiver operating characteristic (ROC) curve [Concordance statistic; C-statistic] was used to further assess how well the model could distinguish between positive and negative outcomes across different probability thresholds. A C-statistic value

below 0.5 indicates a model performing no better than random chance.[32] IBM ® SPSS Statistical Software version 26.0 was used for all data analyses performed.

Covariates used within the current study include age, race, anxiety, depression, homelessness status, employment hope, and perceived barriers to employment. Age and race are commonly included as covariates in social science research, including studies within the field of veteran healthcare. These demographic variables are critical for examining potential disparities and demographic trends within the veteran population. Anxiety and depression are significant covariates in our study due to their known impact on individuals' mental health and their potential influence on program enrollment and retention. Veterans with mental health and substance use disorders often experience high levels of anxiety and depression, which can hinder their ability to seek and engage in vocational rehabilitation and employment programs. Homelessness status is a crucial covariate in our study given its relevance to the target population of veterans with mental health and substance use disorders. Veterans experiencing homelessness face unique challenges and barriers that may impact their access to and engagement with VA healthcare services, including vocational rehabilitation and employment programs. Hope for employment and barriers to employment are important covariates in our study as they reflect veterans' attitudes, beliefs, and perceived challenges related to vocational rehabilitation and employment. Veterans with mental health and substance use disorders may experience low levels of hope for employment and encounter various barriers that impede their successful integration into the workforce.

Results
Research Question #1: to What Extent Do Demographic Variables (Eg, Mental Health and/or SUD Diagnosis, Age, Homelessness Status) Predict Program Enrollment into VA Healthcare Vocational Rehabilitation After a Consult for Services is Placed?

A hierarchical logistic regression analysis was performed with several demographic variables (see Table 1) to analyze if the following variables predicted program enrollment into vocational rehabilitation. Using blockwise progression, we attempted to isolate the influence of each group of variables. The hierarchical logistic regression model was statistically significant at block 2 (Nagelkerke R^2 = 0.065), block 4 (Nagelkerke R^2 = 0.089), and block 5 (Nagelkerke R^2 = 0.106), though for each block, the Nagelkerke R^2 remained fairly small, indicating that the model only accounts for a small percentage of the change in the dependent variable. The area under ROC curves (C-statistics) of the models (block 1 to 5) ranged from 0.577 to 0.663, and all the 95% confidence intervals did not include 0.5, indicating that the regression model demonstrated a fair to a good level of discriminatory ability.[33] The findings from the hierarchical logistic regression program enrollment outcomes with effect modification are displayed in Table 2. No significant results occurred when adjusting for race and including other covariates.

In addition, when controlling for covariates, neither SUD [OR = 1.154; 95% CI = 0.563–2.365] nor mental health [OR = 0.871; 95% CI = 0.535–1.418] treatment before the initial consult appointment predicted vocational rehabilitation program enrollment. Interestingly, in the final block, we added the Employment Hope Scale (EHS) score, which could also be associated with the likelihood of program enrollment.[30] We were concerned that differences in psychological empowerment as it relates to employment could introduce bias into the model. Results indicated that EHS significantly predicted vocational rehabilitation program enrollment [OR = 1.139; 95% CI = 1.038, 1.249]. This finding suggests that psychological empowerment (confidence in one's ability to work or find work) is a significant factor in determining whether a veteran is enrolled in the vocational rehabilitation program (eg, the program may not have success in scheduling the veteran's initial consult appointment, thus resulting in the veteran not being enrolled).

Research Question #2: to What Extent Does Prior Mental Health or Substance Use Treatment Before Consult (60 Days Prior) Predict Program Enrollment into VA Healthcare Vocational Rehabilitation for Veterans with Mental Health or SUD Diagnoses?

A multivariable logistic regression analysis was performed to analyze if SUD treatment engagement 60 days prior to the referral date [yes, no] for Veterans with a SUD diagnosis predicted enrollment in vocational rehabilitation for veterans with SUDs (n = 14). Findings showed that frequency of SUD treatment sessions 60 days before referral [OR = 2.449,

Table 1 Demographic Characteristics

	Passed over N=245	Enrolled N=157	Employed at Discharge (No) N = 381	Employed at Discharge (Yes) N = 21
Age, mean (SD)	47.7 (13.5)	50.1 (12.7)	48.4 (13.2)	53.4 (12.3)
	N (%)	N (%)		
Race				
White (ref. category)	171 (69.8)	117 (74.5)	273 (71.7)	15 (71.4)
Black or AA	52 (21.2)	35 (22.3)	82 (21.5)	5 (23.8)
Hispanic or Latinx	2 (0.8)	1 (0.6)	2 (0.5)	1 (4.8)
Asian	1 (0.4)	1 (0.6)	2 (0.5)	0 (0.0)
AIAN	1 (0.4)	1 (0.6)	2 (0.5)	0 (0.0)
"Unknown"	5 (2.0)	0 (0.0)	5 (1.3)	0 (0.0)
Race/Ethnicity not reported	13 (5.3)	2 (1.3)	15 (3.9)	0 (0.0)
Gender				
Male (ref. category)	221 (90.2)	145 (92.4)	346 (90.8)	20 (95.2)
Female	23 (9.4)	11 (7.0)	33 (8.7)	1 (4.8)
Transgender	1 (0.4)	1 (0.6)	2 (0.5)	0 (0.0)
Homeless status – yes	55 (22.5)	54 (34.4)	102 (26.8)	7 (33.3)
Felony – yes	25 (10.2)	17 (10.8)	39 (10.2)	3 (14.3)
Psychiatric Diagnosis – yes	241 (87.4)	142 (90.5)	335 (87.9)	21 (100.0)
Mental Health/SUD Tx				
SUD Tx (prior) yes	42 (17.1)	42 (26.8)	75 (19.7)	9 (42.9)
Mental Health Tx (prior) yes	146 (59.6)	102 (65.0)	231 (60.6)	17 (81.0)
SUD Tx (# sess. 60 days prior), mean (SD)	3.55 (10.69)	6.74 (15.68)	4.07 (11.48)	17.90 (25.82)
SUD Tx (# sess. 60 days prior), mean (SD)	7.64 (13.29)	13.27 (20.90)	9.10 (15.39)	23.14 (31.87)
EHS score	6.70 (2.53)	7.52 (2.46)	6.98 (2.54)	7.79 (2.35)

95% CI = 0.065–92.653) did not predict program enrollment for veterans with SUDs while controlling for age, race, anxiety, depression, homelessness status (at entry), employment readiness, employment hope rating, and perceived employment barriers rating. The OR for prior SUD treatment (60 days before initial vocational rehabilitation consult appointment) was not available due to the small sample size (see Table 3).

A multivariable logistic regression analysis was performed to analyze if mental health treatment engagement 60 days prior to the referral date [yes, no] for veterans with a mental health diagnosis predicted enrollment in vocational rehabilitation for veterans with mental health disorders (n = 161). Findings showed that prior mental health treatment (60 days before initial vocational rehabilitation consult appointment) [OR = 0.899, 95% CI = 0.442–1.828] and frequency of mental health treatment sessions 60 days before referral [OR = 1.014, 95% CI = 0.987–1.042] did not predict program enrollment for veterans with mental health disorders while controlling for age, race, anxiety, depression, homelessness status (at entry), employment readiness, employment hope rating, and perceived employment barriers (see Table 4).

Sprong et al

Table 2 Hierarchical Logistic Regression Results for VA Vocational Rehabilitation Program Referrals with Covariates and Program Enrollment Outcomes

	Block 1		Block 2		Block 3		Block 4		Block 5	
	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)
Age	1.012	0.996–1.028	1.012	0.996–1.029	1.013	0.997–1.030	1.014	0.997–1.030	1.012	0.996–1.029
Race										
White (ref. category)										
Black or AA	0.923	0.560–1.521	0.862	0.517–1.435	0.844	0.504–1.414	0.811	0.481–1.367	0.750	0.441–1.276
Hispanic or Latinx	0.731	0.065–8.223	0.539	0.045–6.436	0.500	0.040–6.172	0.504	0.040–6.317	0.441	0.035–5.622
Asian	1.700	0.104–27.733	2.140	0.129–35.596	2.285	0.137–38.149	2.343	0.141–39.052	2.547	0.149–43.687
AIAN	1.979	0.118–33.133	2.205	0.132–36.884	2.328	0.139–39.014	2.142	0.127–36.123	2.092	0.125–35.091
"Unknown"	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A
Race/Ethnicity not reported	0.257	0.056–1.172	0.237	0.052–1.088	0.247	0.053–1.141	0.247	0.053–1.148	0.243	0.052–1.142
Gender										
Male (ref. category)										
Female	0.783	0.362–1.691	0.874	0.401–1.906	0.867	0.396–1.898	0.872	0.397–1.916	0.810	0.366–1.794
Transgender	1.358	0.084–21.962	0.839	0.051–13.922	0.752	0.044–12.723	0.795	0.047–13.411	0.907	0.054–15.232
Homeless status – yes/no			1.882**	1.171–3.025	1.764*	1.087–2.862	1.639*	1.001–2.685	1.706*	1.036–2.809
Felony – yes/no			0.872	0.437–1.742	0.842	0.420–1.688	0.886	0.439–1.787	0.800	0.394–1.625
Psychiatric Diagnosis – yes/no					1.314	0.655–2.637	1.282	0.636–2.584	1.213	0.595–2.471
Mental Health/SUD Tx										
SUD Tx (prior) yes/no					1.523	0.888–2.611	1.177	0.579–2.393	1.154	0.563–2.365
Mental Health Tx (prior) yes/no					0.992	0.623–1.579	0.881	0.544–1.427	0.871	0.535–1.418
SUD Tx (# sess. 60 days prior)							0.998	0.972–1.023	0.997	0.971–1.023
SUD Tx (# sess. 60 days prior)							1.017	0.998–1.035	1.016	0.997–1.035
EHS score									1.139**	1.038–1.249
Nagelkerke R2 (change)	0.043		0.065		0.077		0.089		0.114**	
C-Statistic	0.577	0.5201–0.6332	0.612	0.5562–0.6682	0.629	0.5749–0.6840	0.637	0.5823–0.6919	0.663	0.6083–0.7168

Note: *p≤.05; **p≤.01.
Abbreviations: SUD, Substance Use Disorder; AIAN, American Indian or Alaskan Native; AA, African American.

Table 3 Multivariable Logistic Regression Results for VA Vocational Rehabilitation Program Referrals with Covariates and Program Enrollment Outcomes with Effect Modification

Interaction Term**	OR	95% CI	p-value
Race (AIAN$)* SUD Tx (prior) yes	0.000	0.000–999.99	–
Race (Asian)* SUD Tx (prior) yes	0.000	0.000–999.99	–
Race (Black)* SUD Tx (prior) yes	1.308	0.070–24.294	0.8959
Race (Not reported)* SUD Tx (prior) yes	1.357	0.080–23.141	0.9035
Race (Hispanic)* SUD Tx (prior) yes	0.542	0.000–999.99	–
Race (Unknown)* SUD Tx (prior) yes	0.000	0.000–999.99	–
Race (AIAN)$* Mental Health Tx (prior) yes	0.000	0.000–999.99	–
Race (Asian)* Mental Health Tx (prior) yes	0.000	0.000–999.99	–
Race (Black)* Mental Health Tx (prior) yes	0.945	0.493–1.809	0.9904
Race (Not reported)* Mental Health Tx (prior) yes	0.331	0.037–2.982	0.9916
Race (Hispanic)* Mental Health Tx (prior) yes	0.461	0.039–5.523	0.9886
Race (Unknown)* Mental Health Tx (prior) yes	0.000	0.000–999.99	–
Race (AIAN)$* SUD Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	–
Race (Asian)$* SUD Tx (# sess. 60 days prior, mean)	679.790	0.000–999.99	–
Race (Black)$* SUD Tx (# sess. 60 days prior, mean)	0.774	0.455–1.315	0.8913
Race (Not reported)$* SUD Tx (# sess. 60 days prior, mean)	0.205	0.009–4.546	0.8998
Race (Hispanic)$* SUD Tx (# sess. 60 days prior, mean)	0.034	0.000–999.99	–
Race (Unknown)$* SUD Tx (# sess. 60 days prior, mean)	0.064	0.000–999.99	–
Race (AIAN)$* Mental Health Tx (# sess. 60 days prior, mean)	0.909	0.000–999.99	0.8712
Race (Asian)$* Mental Health Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	–
Race (Black)$* Mental Health Tx (# sess. 60 days prior, mean)	0.752	0.439–1.286	0.9181
Race (Not reported)$* Mental Health Tx (# sess. 60 days prior, mean)	0.251	0.054–1.177	0.9179
Race (Hispanic)$* Mental Health Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	–
Race (Unknown)$* Mental Health Tx (# sess. 60 days prior, mean)	0.262	0.000–999.99	0.9900

Notes: *is used as an indicator of an statistical interaction between two variables. **Models included age, gender, homeless status, Felony, Psychiatric Diagnosis, and EHS score. $White was the reference.
Abbreviations: AIAN, American Indian or Alaskan Native; AA, African American; SUD, Substance Use Disorder; Tx, Treatment; EHS = Employment Hope Scale.

A multivariable logistic regression analysis was performed to analyze if simultaneous SUD and mental health treatment engagement 60 days prior to the referral date [yes, no] for veterans with a SUD and mental health diagnosis predicted enrollment in vocational rehabilitation for veterans with SUDs and co-occurring mental health disorders (n = 191). Findings showed that prior SUD and mental health treatment (60 days before initial vocational rehabilitation consult appointment) [OR = 1.556, 95% CI = 0.772–3.138; OR = 1.075, 95% CI = 0.525–2.200] and frequency of SUD and mental health treatment sessions 60 days before referral [OR = 0.995, 95% CI = 0.968–1.023; OR = 1.017, 95% CI = 0.993–1.042] did not predict program enrollment for veterans with mental health and SUD disorders, while controlling for age, race, anxiety, depression, homelessness status (at entry), employment readiness, employment hope rating, and perceived employment

Table 4 Multivariable Logistic Regression Results for Prior Mental Health or Substance Use Treatment Before Consult (60 Days Prior) on Program Enrollment for VA Vocational Rehabilitation

	SUD				Mental Health				SUD + Mental Health			
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age	3.06	0.001–999.999	5.179	0.008–999.999	1.019	0.991–1.048	1.108	0.990–1.047	1.004	0.980–1.030	1.005	0.980–1.031
Race												
White (ref. category)	1		1		1		1		1		1	
Black or AA	0.236	0.001–999.999	1.639	0.001–999.999	0.710	0.275–1.833	0.721	0.281–1.848	1.095	0.518–2.313	1.034	0.485–2.204
Hispanic or Latinx	N/A		N/A		N/A		N/A		1.000	0.050–19.981	0.947	0.049–18.146
Asian	N/A		N/A		2.688	0.144–50.173	3.023	0.159–57.303	N/A		N/A	
AIAN	N/A		N/A		1.705	0.090–32.269	1.655	0.090–30.465	N/A		N/A	
"Unknown"	N/A		N/A		N/A		N/A		N/A		N/A	
Race/Ethnicity not reported	N/A		N/A		0.215	0.023–2.108	0.240	0.026–2.224	0.440	0.046–4.180	0.434	0.046–4.095
MENTAL HEALTH Diagnosis												
Anxiety	N/A		N/A		0.755	0.371–1.536	0.795	0.392–1.610	0.723	0.392–1.333	0.747	0.406–1.375
Depressive	N/A		N/A		1.130	0.548–2.330	1.196	0.573–2.498	1.214	0.641–2.300	1.269	0.667–2.417
Homelessness	N/A		N/A		1.397	0.450–4.342	1.334	0.430–4.134	1.478	0.776–2.813	1.393	0.719–2.699
ERS score	0.985	0.155–6.250	1.416	0.386–5.202	0.986	0.963–1.010	0.984	0.960–1.007	0.983	0.966–1.001	0.985	0.968–1.003
EHS score	0.248	0.001–999.99	3.675	0.004–999.999	1.199	1.007–1.427*	1.172	0.984–1.395	1.125	0.984–1.286	1.124	0.983–1.284
PEBS score	N/A		N/A		0.926	0.463–1.852	0.937	0.469–1.875	0.721	0.408–1.273	0.709	0.401–1.254
MENTAL HEALTH/SUD Tx												
SUD Tx (prior) yes/no	N/A								1.556	0.772–3.138		
SUD Tx (# sess. 60 days prior)			2.449	0.065–92.653							0.995	0.968–1.023
MENTAL HEALTH Tx (prior) yes/no					0.899	0.442–1.828			1.075	0.525–2.200		
MENTAL HEALTH Tx (# sess. 60 days prior)							1.014	0.987–1.042			1.017	0.993–1.042
C-Statistics	N/A		N/A		0.6945	0.6099–0.7791	0.6938	0.6081–0.7796	0.6783	0.6007–0.7558	0.6914	0.6133–0.7696

Abbreviations: AIAN, American Indian or Alaskan Native; AA, African American; SUD, Substance Use Disorder; MENTAL HEALTH, Mental health; Tx, Treatment; ERS, Employment Readiness Scale; EHS, Employment Hope Scale; PEBS, Perceived Employment Barriers Scale.

barriers (see Table 4). Except for the SUD only models, the c-statistic scores for the mental health and SUD + mental health models ranged from 0.6783 to 0.6945, indicating that the regression model demonstrated a level of discriminatory ability better than random chance and had predictive value. Displayed in Table 5 are the program enrollment outcomes from the multivariable logistic regression analysis with effect modification.

Table 5 Multivariable Logistic Regression Results for Prior Mental Health or Substance Use Treatment Before Consult (60 Days Prior) on Program Enrollment for VA Vocational Rehabilitation with Effect Modification

	SUD		Mental Health		SUD + Mental Health	
	OR	95% CI	OR	95% CI	OR	95% CI
Interaction term**						
Race (AIAN)$*$ SUD Tx (prior) yes	–	–	3.523	0.005–999.99	–	–
Race (Asian)* SUD Tx (prior) yes	–	–	3.730	0.054–255.753	–	–
Race (Black)* SUD Tx (prior) yes	0.000	0.000–999.99	0.986	0.059–16.459	2.417	0.725–8.056
Race (Not reported)* SUD Tx (prior) yes	–	–	0.311	0.008–12.232	2.867	0.141–58.339
Race (Hispanic)* SUD Tx (prior) yes	–	–	0.000	0.000–999.99	0.000	0.000–999.99
Race (Unknown)* SUD Tx (prior) yes	–	–	0.000	0.000–999.99	0.594	0.000–999.99
Race (AIAN)$*$ MENTAL HEALTH Tx (prior) yes	–	–	0.000	0.000–999.99	–	–
Race (Asian)* MENTAL HEALTH Tx (prior) yes	–	–	0.000	0.000–999.99	–	–
Race (Black)* MENTAL HEALTH Tx (prior) yes	0.000	0.000–999.99	0.358	0.086–1.497	1.368	0.574–3.260
Race (Not reported)* MENTAL HEALTH Tx (prior) yes	–	–	0.000	0.000–999.99	1.148	0.087–15.099
Race (Hispanic)* MENTAL HEALTH Tx (prior) yes	–	–	0.000	0.000–999.99	1.030	0.056–18.907
Race (Unknown)* MENTAL HEALTH Tx (prior) yes	–	–	0.000	0.000–999.99	0.000	0.000–999.99
Race (AIAN)$*$ SUD Tx (# sess. 60 days prior, mean)	–	–	1.346	0.068–26.820	–	–
Race (Asian)$*$ SUD Tx (# sess. 60 days prior, mean)	–	–	2.343	0.122–45.083	–	–
Race (Black)$*$ SUD Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	0.713	0.275–1.848	1.147	0.538–2.445
Race (Not reported)$*$ SUD Tx (# sess. 60 days prior, mean)	–	–	0.211	0.022–1.984	0.000	0.000–999.99
Race (Hispanic)$*$ SUD Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	1.286	0.000–999.99
Race (Unknown)$*$ SUD Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	0.009	0.000–999.99
Race (AIAN)$*$ MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	–	–
Race (Asian)$*$ MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	–	–
Race (Black)$*$ MENTAL HEALTH Tx (# sess. 60 days prior, mean)	9.519	0.000–999.99	0.000	0.000–0.011	1.026	0.478–2.204
Race (Not reported)$*$ MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	0.395	0.037–4.209
Race (Hispanic)$*$ MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	0.003	0.000–999.99
Race (Unknown)$*$ MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	0.000	0.000–999.99	0.009	0.000–999.99

Notes: *is used as an indicator of an statistical interaction between two variables. **Models included age, MENTAL HEALTH diagnosis, homeless status, ERS score, EHS score, and PEBS score. $White was the reference.
Abbreviations: AIAN, American Indian or Alaskan Native; AA, African American; SUD, Substance Use Disorder; MENTAL HEALTH, Mental health; Tx, Treatment; ERS, Employment Readiness Scale; EHS, Employment Hope Scale; PEBS, Perceived Employment Barriers Scale.

Research Question #3: to What Extent is Employment at Discharge from Vocational Rehabilitation Predicted by Concurrent Mental Health and/or Substance Use Treatment Enrollment and Frequency of Sessions (Group or Individual) for Veterans with Mental Health and/or SUD Diagnoses?

Fifty-three discharged veterans were included in the dataset, with 19 securing employment. A hierarchical logistic regression was used to examine the effect of additional variables. In the first step, we determined whether they received treatment during the program, and in the second, we determined the number of treatment sessions (if they did receive treatment). In the final block, we added covariates like those in the previous regression. As shown in Table 5, the number of SUD treatment sessions for veterans diagnosed with SUDs was significantly and negatively associated with the employment outcomes in both Block 2 [OR = 0.805; 95% CI = 0.662–0.980] and Block 3 [OR = 0.793; 95% CI = 0.638–0.987] models. In all three Blocks, SUD treatment had a high odds ratio (1.004 and 1.031), but it was not statistically significant, though it was close in Block 2 (p = 0.064). Again, with so few cases, it is not surprising that there are no significant differences. Displayed in Table 6 are employment at discharge outcomes from the hierarchical logistic regression analysis with effect modification. No significant results occurred when adjusting for race and including other covariates for employment at discharge (see Table 7).

Table 6 Hierarchical Logistic Regression Results for VA Vocational Rehabilitation Program Veteran Referrals with Covariates and Program Enrollment Outcomes

	Block 1		Block 2		Block 3	
	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)
MENTAL HEALTH/SUD Tx (while enrolled in vocational rehabilitation)						
SUD Tx (yes/no)	1.333	0.337–5.273	11.163	0.867–143.767	12.805	0.677–242.038
MENTAL HEALTH Tx (yes/no)	0.750	0.190–2.966	3.055	0.479–19.483	1.953	0.234–16.288
MENTAL HEALTH/SUD Tx						
SUD Tx (# sess. during)			1.004	0.918–1.099	1.031	0.926–1.149
MENTAL HEALTH Tx (# sess. during)			0.805*	0.662–0.980	0.793*	0.638–0.987
Age					0.986	0.913–1.064
Race						
White (ref. category)						
Black or AA					0.942	0.113–7.814
Hispanic or Latinx					0.000	0.000–999.99
Asian					0.000	0.000–999.99
AIAN					–	–
"Unknown"					–	–
Race/Ethnicity not reported					0.000	0.000–999.99
Gender						
Male (ref. category)						
Female					0.754	0.033–17.427
Transgender					0.000	0.000–999.99

(*Continued*)

Table 6 (Continued).

	Block 1		Block 2		Block 3	
	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)
Homeless status – no/yes					0.237	0.037–1.500
Felony – no/yes					1.205	0.110–13.192
EHS score					1.143	0.827–1.579
Constant	0.667		0.741			
Nagelkerke R2 (change)	0.006		0.402**		0.509*	
C-statistic	0.535		0.832		0.873	

Note: *p≤.05; **p≤.01.
Abbreviations: EHS, Employment Hope Scale; AIAN, American Indian or Alaskan Native; AA, African American; SUD, Substance Use Disorder; MENTAL HEALTH, Mental health; Tx, Treatment.

Table 7 Multivariable Logistic Regression Results for Veterans Enrolled in VA Vocational Rehabilitation with Covariates and Employment at Discharge Outcomes with Effect Modification

Interaction Term**	OR	95% CI	p-value
Race (AIAN)$* SUD Tx yes	–	–	–
Race (Asian)* SUD Tx yes	0.000	0.000–999.99	0.7202
Race (Black)* SUD Tx yes	2.122	0.159–28.337	–
Race (Not reported)* SUD Tx yes	0.000	0.000–999.99	–
Race (Hispanic)* SUD Tx yes	0.000	0.000–999.99	–
Race (Unknown)* SUD Tx yes	–	–	–
Race (AIAN)$* MENTAL HEALTH Tx (prior) yes	–	–	–
Race (Asian)* MENTAL HEALTH Tx (prior) yes	0.000	0.000–999.99	0.3942
Race (Black)* MENTAL HEALTH Tx (prior) yes	2.437	0.313–18.993	–
Race (Not reported)* MENTAL HEALTH Tx (prior) yes	0.000	0.000–999.99	–
Race (Hispanic)* MENTAL HEALTH Tx (prior) yes	0.000	0.000–999.99	–
Race (Unknown)* MENTAL HEALTH Tx (prior) yes	–	–	–
Race (AIAN)$* SUD Tx (# sess. 60 days prior, mean)	–	–	–
Race (Asian)$* SUD Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	0.6045
Race (Black)$* SUD Tx (# sess. 60 days prior, mean)	1.568	0.270–9.109	–
Race (Not reported)$* SUD Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	–
Race (Hispanic)$* SUD Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	–
Race (Unknown)$* SUD Tx (# sess. 60 days prior, mean)	–	–	–
Race (AIAN)$* MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	–
Race (Asian)$* MENTAL HEALTH Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	0.7530

(Continued)

Table 7 (Continued).

Interaction Term**	OR	95% CI	p-value
Race (Black)** MENTAL HEALTH Tx (# sess. 60 days prior, mean)	1.873	0.218–16.106	–
Race (Not reported)** MENTAL HEALTH Tx (# sess. 60 days prior, mean)	1.942	0.000–999.99	–
Race (Hispanic)** MENTAL HEALTH Tx (# sess. 60 days prior, mean)	0.000	0.000–999.99	–
Race (Unknown)** MENTAL HEALTH Tx (# sess. 60 days prior, mean)	–	–	–

Notes: *is used as an indicator of an statistical interaction between two variables. **Models included age, gender, homeless status, Felony, Psychiatric Diagnosis, and EHS score. *White was the reference.
Abbreviations: AIAN, American Indian or Alaskan Native; AA, African American; SUD, Substance Use Disorder; MENTAL HEALTH, Mental health; Tx, Treatment; EHS, Employment Hope Scale.

Research Question #4: to What Extent Does Employment Status at Discharge Predict Continued Treatment for SUDs and/or Mental Health Disorders Post-Discharge from Vocational Rehabilitation?

Fifty-three of the 402 veterans in this study records and were discharged, with 19 obtaining employment immediately upon discharge (17 were still employed 60 days after discharge). Of the veterans discharged, 6 of the 17 continued SUD treatment, 10 continued mental health treatment, and 4 continued both SUD and mental health treatment (see Table 8). While enrolled in the vocational rehabilitation program, 6 of 19 veterans were enrolled in SUD treatment (5 of these veterans continued SUD treatment post-vocational rehabilitation program discharge) and 13 of 19 veterans received mental health treatment (10 of these veterans continued mental health treatment post-vocational rehabilitation program discharge). As shown in Table 8, logistic regression analysis revealed that employment at discharge did not predict continued mental health or SUD treatment after exiting a vocational rehabilitation program (as measured 60 days post-vocational rehabilitation discharge). However, veterans with both SUD and MENTAL HEALTH and continued MENTAL HEALTH treatment were less likely to be employed (OR = 0.199, 95% CI = 0.042–0.948).

Discussion

Psychiatric and SUDs have a substantial negative impact on the overall health of veterans. Studies indicate that an alarming 97.4% of veterans with both psychiatric and SUDs are unemployed, whereas the unemployment rates for veterans and civilians without these diagnoses are 2.4% and 7.5%, respectively.[10] While the Veterans Health Administration (VHA) has largely focused on improving veterans' access to care, little attention has been paid to understanding the factors that influence whether a veteran enrolls in the treatment for which they are eligible.

The research aimed to accomplish multiple objectives. The study's first objective was to determine if mental health and/or SUDs could predict participation in a VHA vocational rehabilitation program. The second objective of the study was to determine if prior mental health or substance use treatment received within 60 days before the referral date influenced enrollment in a VHA vocational rehabilitation program for individuals with mental health

Table 8 Multivariable Logistic Regression Results for Whether Veterans Continued SUD or MENTAL HEALTH Treatment Post-Discharge from VA Vocational Rehabilitation

	SUD		Mental Health		SUD + Mental Health	
	OR	95% CI	OR	95% CI	OR	95% CI
Continued SUD treatment	N/A				0.199	0.042–0.948
Continued MENTAL HEALTH treatment			1.000	0.053–18.915	3.012	0.636–14.260

Abbreviations: SUD, Substance Use Disorders; MENTAL HEALTH, Mental health; VA, Veteran Affairs.

and/or SUDs. The third objective of the study was to determine whether concurrent mental health and/or substance abuse treatment could predict employment upon discharge. The final objective of the study was to determine whether employment at discharge was predictive of continued participation in mental health and/or substance abuse treatment.

Prior Mental Health or Substance Use Treatment

Concerning veterans with substance abuse and mental health diagnoses, our inter-group analysis revealed a significant relationship between previous substance abuse treatment and enrollment in the Veteran Affairs Healthcare Vocational Rehabilitation program. In other words, veterans who had previously received substance abuse treatment (within the past 60 days before referral) were more likely to participate in the vocational rehabilitation program provided by the Veteran Affairs Healthcare system. Possible reasons for the current study findings include (1) improved readiness for vocational rehabilitation and obtaining employment, (2) greater personal motivation and employment hope, (3) enhanced support networks, and (4) increased access to comprehensive care. Intriguingly, we observed significant differences in this regard between women and Black or African American men (possibly due to the small sample size), but not between White non-Hispanic participants.

We found no statistically significant correlation between mental health treatment before consultation and enrollment in the Veteran Affairs Healthcare Vocational Rehabilitation program. Despite this, our analysis of mental health and substance abuse treatment variables concerning enrollment in vocational rehabilitation revealed a significant relationship across all groups. Veterans who had completed substance abuse and/or mental health treatment within the preceding 60 days were more likely to enroll in the VA healthcare vocational rehabilitation program than those who had not. These results are consistent with the existing literature, which suggests that combining vocational rehabilitation or employment services with mental health and/or SUD treatment results in marginally better occupational and health outcomes.[19]

Predictors of Program Enrollment

Analysis of the relationship between demographic variables (including mental health /SUD diagnosis, age, and homelessness status) and VA Vocational Rehabilitation program enrollment revealed statistically significant relationships at blocks 2, 4, and 5. It is essential to note, however, that the variance observed in our dependent variable, program enrollment status within the VHA's vocational rehabilitation program, was relatively small. When demographic variables were controlled for, neither SUD nor mental health disorder was associated with program enrollment.

The EHS (Employment Hope Scale) scores were found to be significantly and positively correlated with participation in vocational rehabilitation. These outcomes were anticipated, given that the primary objective of vocational rehabilitation is to assist veterans in securing employment. The findings are consistent with those of Stevenson's et al[9] study, which also emphasized that veterans seek meaningful employment and clearer career paths to support their mental health and prevent substance abuse. We suggest including the Employment Hope Scale (EHS) as a variable in similar future analyses to control for this motivational factor.

Future research should investigate whether the type of mental health treatment (eg, group therapy, counseling) and/or substance abuse treatment (eg, methadone, buprenorphine) influences participation in VA Vocational Rehabilitation programs. In addition, examining the association between specific mental health diagnoses (eg, post-traumatic stress disorder, depression, anxiety, etc.) and the likelihood of veterans participating in vocational rehabilitation programs could yield valuable information. Another research avenue could examine the relationship between the type of substance abused (eg, heroin, cocaine, methamphetamine) and the likelihood of veterans enrolling in vocational rehabilitation programs. Such research would improve our understanding of the factors that influence program enrollment and could lead to the enhancement of support systems for the successful reintegration of veterans into the workforce.

Post-Discharge Treatment Engagement

Our chi-square analysis revealed no statistically significant relationships between mental health and SUD treatment and continued employment after discharge from vocational rehabilitation. Importantly, only 53 participants met the inclusion criteria for this research question, and only 19 of those participants were employed at the time of discharge. The small

sample size may have influenced the observed relationships. Nevertheless, 94% (16 of 17) of veterans who maintained employment following discharge from vocational rehabilitation also continued to receive mental health or SUD treatment. These findings are consistent with those of Kerrigan et al[16] indicating that employment plays an important role in treatment outcomes and can be a crucial factor in treatment retention. Furthermore, research suggests employment is a strong predictor of treatment engagement and compliance.[18] We acknowledge that our relatively small sample size may have contributed to our inability to achieve statistical significance.

It is recommended that future research include a more diverse sample of veterans from various locations or Veterans Integrated Service Networks (VISNs) across the country. This would contribute to the generalizability of the findings and provide a broader perspective on the association between treatment, employment, and successful reintegration. The current findings highlight the importance of providing adequate SUD and mental health services to veterans diagnosed with these conditions. Veterans with substance abuse and mental health disorders are more likely to enroll in Department of Veterans Affairs vocational rehabilitation programs if they receive treatment for at least 60 days before their initial consultation. While pursuing vocational rehabilitation, addressing mental health and SUDs can contribute to veterans' self-sufficiency and facilitate proper reintegration for those with visible and invisible injuries alike.

Limitations

While this investigation offers valuable insights into the correlation between mental health and/or Substance Use Disorder treatment engagement and vocational rehabilitation within the Veterans Health Administration, its findings are subject to certain limitations that constrain generalizability and interpretation. Despite the limitations listed below, the study contributes significantly to the existing body of knowledge on the intersection of mental health and/or SUD treatment engagement and vocational rehabilitation within the VA healthcare system. The insights garnered provide a foundational understanding of the dynamics at play, laying the groundwork for future investigations to build upon.

The primary limitation is that the study relied on pre-existing program evaluation data from a singular VHA vocational rehabilitation program. Despite efforts to mitigate biases in data entry and collection, conducted through the use of the Computerized Patient Record System (CPRS) and Joint Legacy Viewer (JLV) for data accuracy assessment, complete elimination of data entry errors proved unattainable. Additionally, the absence of certain variables, such as detailed information on treatment modalities or specific mental health and/or SUD diagnoses, may have impacted the precision of the analyses.

The second limitation pertains to generalizability, specifically the challenge of extrapolating the study's outcomes to other VA medical centers or diverse geographic regions. Disparities in resources (eg, staffing), treatment programs, and employment opportunities across regions may influence the study's findings. Future research endeavors should encompass data from multiple VA medical centers spanning various Veterans Integrated Service Networks (VISNs) to enhance generalizability.

The third limitation involves the absence of extended follow-up data; the study only considered outcomes within the initial 60 days post-vocational rehabilitation program discharge. Without long-term follow-up information, comprehending sustained mental health and/or SUD treatment engagement and employment status beyond this timeframe remains elusive, hindering the assessment of the long-term impact on veterans simultaneously undergoing vocational rehabilitation and mental health and/or SUD treatment.

A final primary limitation is the exclusion of potential confounding variables from the study. Despite attempts to control for demographic and additional confounding factors, there remains the possibility that unmeasured variables, such as the severity of mental health and/or SUD conditions, social support systems, or legal barriers (eg, felony convictions), may have influenced the study's outcomes.

Conclusions

This research contributes to a greater understanding of the complex interactions between veterans' mental health, SUD treatment, vocational rehabilitation, and employment outcomes. The findings highlight the importance of providing veterans with mental health and SUD with comprehensive support and services, with an emphasis on integrating vocational rehabilitation to improve employment prospects and overall well-being. By addressing these interrelated issues, policymakers

and healthcare professionals can better assist veterans in achieving self-sufficiency, reintegrating into civilian society, and enhancing their quality of life as a whole. In their pursuit of a fulfilling and productive life after military service, veterans who face mental health and SUD abuse issues can benefit from additional research and program development that leads to more effective interventions and improved outcomes. Further investigation into the relationship between the types of treatment received and program enrollment could yield valuable insights. In addition, the study highlighted the significance of continued treatment engagement for veterans after vocational rehabilitation discharge. The majority of veterans who maintained employment after discharge continued to receive mental health and/or SUD treatment, even though the sample size for this analysis was small. This is consistent with previous research demonstrating that employment can positively influence treatment outcomes and patient retention.

Data Sharing Statement

The datasets analyzed are property of the US Department of Veteran Affairs and special permission and requirements are necessary before approved access to patient information is granted. Thus, the dataset used in the current study is not available for public use.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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