

Spinal cord injury combined with felony history: Effect on supported employment for Veterans

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Abstract—In this secondary analysis of data from a randomized controlled trial comparing supported employment with treatment as usual, we sought to evaluate the study incident rate of legal involvement and subsequent effects of legal involvement on employment among 157 job-seeking Veterans with spinal cord injury. The supported employment vocational rehabilitation program, called the Spinal Cord Injury-Vocational Integration Program, adhered as closely as possible to principles of supported employment as developed and described in the individual placement and support model of supported employment for persons with mental illness. Rates of misdemeanor and felony arrests and convictions were analyzed, and their relationship to finding employment was evaluated. Findings indicate that 47% had been arrested and 25% had been convicted of a felony. Overall, those who found employment had fewer average arrests and were significantly less likely to have been convicted of a felony. Future directions and limitations are discussed.

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Key words: crime, ex-offender, outcomes, social reintegration, spinal cord injury, supported employment, unemployment, Veterans, vocational rehabilitation, vocational services.

INTRODUCTION

A significant relationship between spinal cord injury (SCI) and unemployment has been consistently reported in studies, though reported employment rates have been variable. For example, employment rates at the first anniversary of the injury have been found to be 13.8 percent, with employment rates of only 40 percent for those more than 12 mo post injury [1]. The time to first employment following an injury can be long, with an average of almost 5 yr to the first employment and more than 6 yr to the first full-time employment [2].

A number of factors are associated with poor employment outcomes. Medical issues, including level of injury [3], and demographic factors, such as race [2], years of education [3–4], preinjury occupation [5], years since

Abbreviations: ANOVA = analysis of variance, C = cervical, CE = competitive employment, CI = confidence interval, CMH = Cochran-Mantel-Haenszel, IPS = individual placement and support, SCI = spinal cord injury, SCI-VIP = Spinal Cord Injury-Vocational Integration Program, SE = supported employment, TAU = treatment as usual, VA = Department of Veterans Affairs, VRS = vocational rehabilitation specialist.

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injury [3,6], disability benefits [6], and independence [5], have all been associated with employment rate. Social factors are also important, such as transportation and community integration [5] and social support and discrimination [7]. Additionally, a number of personal characteristics can also predict employment, including the importance of work to self-efficacy and to locus of control [5].

One factor not previously reviewed is felony conviction and its prevalence and presence among persons with SCI seeking employment and its impact on finding employment. Legal history has been a significant negative predictor for employment in non-SCI populations, with studies reporting unemployment rates as high as 40–55 percent [8]. State programs emphasizing employment on release from prison improve employment rate after discharge, but these successes appear transitory, with employment rate dropping over time [9]. This difficulty with employment results in those with felonies earning 4.6 [9] to 30 percent [10] less than those without a felony history.

Incarceration likely contributes to high unemployment rates in a number of ways. For example, employers may believe that those with felony history do not possess the required values or workplace skills to be successful [11], such as arriving at work on time, attending work daily, and working hard. Legal statutes prevent offenders from entering an increasing number of professions [11]. Some barriers to employment, such as out-of-date skills and limited references, are not specifically related to a specific statutory limitation(s) and employers' biases, but rather to natural consequences of incarceration [10]. Further, due to financial limitations, many inmates are released to similar urban settings, which results in high competition for available jobs, a phenomenon known as "employment saturation."

Surveys of employers have identified a number of factors that may positively influence the decision to hire someone with a felony history [12]. Employers were more inclined to hire those with felony histories if they were qualified for the job, had good interview skills, and came with a reference known to the employer. These employers also recommended to employment specialists that they encourage job seekers to be honest as well as help them practice talking about their conviction and about positive changes in their lives since the conviction. Randomized studies have shown these strategies to successfully help Veterans with convictions find employment [13–14].

Though the rate of incarceration is lower among Veterans than the general population [15], there are a number of reasons to expect a higher level of legal entanglements

among Veterans with SCI. One study reported that persons with SCI had a higher level of sensation-seeking behavior and criminal involvement before the SCI occurred [16]. Persons with SCI have a higher rate of preinjury substance use than the general population [17–19]. Additionally, of the World Health Organization's North American sample of persons with SCI, 10–15 percent of the injuries had resulted from violence [20].

Though employment can be dramatically affected by both SCI and legal history, no studies have evaluated the impact of the combination of these important barriers. This study utilizes data collected during a prospective, randomized clinical trial (Spinal Cord Injury-Vocational Integration Program [SCI-VIP]) to examine whether, in Veterans with SCI, supported employment (SE) is more effective than treatment as usual (TAU) in returning these Veterans to competitive employment (CE) [21–22]. From data collected for SCI-VIP, we describe the legal history of participants with SCI seeking employment. Further, we evaluate the association between legal history and failure to obtain CE, that is, a regular job in the community paying at least minimum wage.

METHODS

Participants and Setting

Participants in this study consisted of 157 job-seeking Veterans with SCI enrolled in SCI-VIP, a larger randomized controlled trial comparing SE with TAU [21]. Participants were 18–65 yr of age and receiving medical and/or rehabilitation healthcare services in SCI Centers at one of six participating Department of Veterans Affairs (VA) medical centers. Veterans who were medically unstable, had active substance abuse that was untreated, or who were gainfully employed (defined as earning more than Social Security's definition of "substantial gainful activity") were not eligible to participate in the study.

Design

Methods of this clinical trial have been described in depth elsewhere [21]. In brief, potential participants were referred to the study by SCI treatment providers or were self-referred. The study compared evidence-based SE with standard vocational rehabilitation for persons with SCI (TAU) [23–25]. After providing informed consent, participants at interventional sites were randomized to either SE or TAU by using a biased coin design [26] without stratification or adjustment to SE or TAU. For

the purposes of this study, only randomized participants were included in the analysis. In the larger trial, there were also nonrandomized participants who all received TAU because SE was not available. Baseline assessments were conducted following enrollment and randomization.

Treatment Conditions

The TAU condition consisted of referral to vocational rehabilitation services outside the VA SCI Center. In the SE condition, a vocational rehabilitation specialist (VRS) was integrated into the SCI interdisciplinary care team in the SCI Center. The VRS was trained in the individual placement and support (IPS) model [23,27] of SE and in basic SCI healthcare by participating in an introductory study-sponsored course, in regularly occurring study conference calls, and in ongoing team-based SCI educational activities and interdisciplinary meetings in the respective SCI Centers. Because the model is considered disability neutral, the following principles of SE were implemented in this study population without any modifications:

- Integration of vocational rehabilitation and medical treatment.
- Focus on participant preferences.
- Rapid job search.
- Focus on CE.
- Ongoing job support.
- Community-based services rather than in an office or hospital setting.
- Personalized benefits counseling.

Fidelity monitoring visits occurred biannually at each SCI Center to measure adherence to the IPS SE model by use of the Fidelity Monitoring Scale [28]. These visits also included technical training of VRSs by IPS experts in implementation of the model.

Data Collection and End Point

For data collection, self-reports of legal history from each participant were recorded as measured by reports of the number of misdemeanors, felony arrests, and convictions and by reports of probation or parole status. The primary end point was obtaining CE. Volunteer work and sheltered employment did not qualify as employment for the purposes of the present study.

Statistical Analysis

Continuous parameters were reported as mean \pm standard deviation, and discrete parameters were reported

as a percentage. Data were explored for departures from normality using standard descriptive statistics. Group comparisons were made with the Student *t*-test or Wilcoxon rank sum tests with normal approximation, where appropriate, for continuous data and Pearson chi-square test or Fisher exact test, where appropriate, for categorical data. Rates of CE are presented as percentage employed per group with 95 percent Wald confidence intervals (CIs) with normal approximation and were performed with an intent-to-treat approach.

All randomized participants for whom data are available contributed to employment analyses rate ratios, and 95 percent CIs were calculated using conditional maximum likelihood. Effect sizes calculated for employment outcome data included rate ratios, Cohen *d* for continuous data, and Cramer phi for categorical data, where appropriate. Comparisons were made between legal outcomes using one-way analysis of variance (ANOVA) or Pearson chi-square test, where appropriate. Comparisons were made between CE and legal outcomes after adjustment for treatment group status using two-way ANOVA or Cochran-Mantel-Haenszel (CMH) statistics. All analyses were performed with SAS, version 9.2 (SAS Institute Inc; Cary, North Carolina).

RESULTS

Participant Characteristics

A total of 157 participants, mean age 50.2 ± 9.4 yr, who were enrolled and completed baseline and 1-year follow-up interviews at interventional sites are included in these results. Participants were primarily male (95.5%, $n = 150$) and Caucasian (45.0%, $n = 70$) or African American (42.0%, $n = 66$) with 13.3 ± 2.2 yr of education (**Table 1**). Marital status was divorced for 39.0 percent ($n = 62$); married, 28.7 percent ($n = 45$); never married, 18.5 percent ($n = 29$); or separated, widowed, or cohabitating, 13.4 percent ($n = 21$). SE and TAU groups did not differ by sex, race, education, or marital status (**Table 1**).

A total of 13.4 percent ($n = 21$) received Supplemental Security Income, and 57.3 percent ($n = 91$) received Social Security Disability Income (**Table 1**). More than half the study sample received VA benefits (59.2%, $n = 93$), with 95.7 percent ($n = 89$) being service connected. Among participants receiving service-connected VA benefits, 38.2 percent ($n = 34$) was for SCI and 10.1 percent ($n = 9$) for "individual unemployment." Among

Table 1.Demographic characteristics at baseline ($n = 157$).

Characteristic	SE ($n = 81$)	TAU ($n = 76$)
Age, yr (mean \pm SD)	48.7 \pm 9.8	49.8 \pm 9.8
Education, yr (mean \pm SD)	13.1 \pm 2.3	13.5 \pm 1.9
Race, n (%)		
White	37 (45.7)	33 (43.4)
African American	29 (35.8)	37 (48.7)
Hispanic	5 (6.2)	1 (1.3)
Other	10 (12.3)	5 (6.6)
Marital Status, n (%)		
Married	30 (37.0)	15 (19.7)
Divorced	28 (34.6)	34 (44.7)
Other	23 (28.4)	27 (35.5)
VA Benefits, n (%)	50 (61.7)	43 (56.6)
SCI Benefits, n (%)		
SC	19 (23.8)	15 (19.7)
If Yes, SC 100%	16 (76.2)	13 (86.8)
No SC/Non-SC SCI Benefits, n (%)	26 (32.1)	20 (26.3)
Non-SC Pension, n (%)	18 (22.2)	18 (23.7)
Monthly Amount, \$ (mean \pm SD)	1,024 \pm 482	986 \pm 421
SSI, n (%)	10 (11.9)	11 (14.5)
SSDI, n (%)	45 (53.6)	46 (60.5)
Neither SSI Nor SSDI, n (%)	26 (32.1)	20 (26.3)

Note: Reported statistic is result of either Student t -test or χ^2 .

SC = service connected, SCI = spinal cord injury, SD = standard deviation, SE = supported employment, SSI = Supplemental Security Income, SSDI = Social Security Disability Insurance, TAU = treatment as usual, VA = Department of Veterans Affairs.

participants receiving VA benefits, 38.7 percent ($n = 36$) reported receiving a non-service-connected pension.

SCIs were sustained an average of 11.5 yr (SD = 11.4) before enrollment (Table 2). Almost half the sample had paraplegia (47.3%, $n = 95$), with the remainder having tetraplegia, either high (cervical [C]1–4; 34.3%, $n = 69$) or low (C5–8; 16.4%, $n = 33$). Of note are the high rate of gunshot wounds, 17 percent, as the cause of SCI and the relatively high rate of substance abuse, 30 percent, neither of which differed significantly between groups (Table 2).

Felony History

At least one lifetime arrest and one lifetime misdemeanor conviction were reported by 47 percent, and 25 percent reported being convicted of a felony. For those with a felony conviction, the average number of lifetime convictions was 1.5 (Table 3). The study rate of misdemeanor arrests did not differ between groups (SE, 45.7%; TAU, 48.7%, $p < 0.71$) (Table 3). Although SE participants averaged more misdemeanor arrests (3.4 ± 4.4) and convictions (2.6 ± 4.8) than TAU participants (2.5 ± 2.1 , $p < 0.22$

Table 2.Clinical characteristics at baseline ($n = 157$).

Characteristic	SE ($n = 81$)	TAU ($n = 76$)
Cause of Injury, n (%)		
Motor Vehicle Accident	30 (35.0)	28 (36.8)
Fall	14 (17.3)	9 (11.8)
Gunshot Wound	15 (18.5)	12 (15.8)
Time Since Injury, Average yr (mean \pm SD)	10.7 \pm 11.3	12.4 \pm 11.6
Functional Independence Measure, Total (mean \pm SD)	98.9 \pm 23.8	98.2 \pm 23.7
AIS Level, n (%)		
A	26 (32.5)	20 (26.3)
B	11 (13.8)	13 (17.1)
C	18 (22.5)	18 (23.7)
D	25 (31.3)	21 (27.6)
E	0 (0.0)	4 (5.3)
AIS and Neurologic Level, n (%)		
High Tetraplegia, AIS A, B, C	12 (15.0)	13 (17.1)
Low Tetraplegia, AIS A, B, C	5 (6.3)	10 (13.2)
Paraplegia, AIS A, B, C	38 (47.5)	27 (35.5)
AIS D/E	25 (31.3)	25 (32.9)
Medical Comorbidities, n (%)		
Hypertension	26 (32.1)	22 (28.9)
Cervical Spondylosis	8 (9.9)	7 (9.2)
Heart Disease	4 (4.9)	5 (6.6)
Degenerative Joint Disease	4 (4.9)	5 (6.6)
Spinal Canal Stenosis	14 (17.3)	11 (14.5)
Chronic Obstructive Pulmonary Disease	2 (2.5)	1 (1.3)
Diabetes	13 (16.1)	12 (15.8)
None of Above	43 (53.1)	38 (50.0)
Mental Health Comorbidities, n (%)		
Depression	28 (34.6)	26 (34.2)
Bipolar Disorder	1 (1.2)	0 (0.0)
Substance Abuse	23 (28.4)	24 (31.6)
Anxiety Disorder	1 (1.2)	3 (3.9)

Note: AIS levels as follows: A = complete, B = sensory incomplete, C = motor incomplete neurologic level muscle grade < 3 , D = motor incomplete neurologic level muscle grade ≥ 3 , E = normal.

AIS = American Spinal Injury Association Impairment Scale, SD = standard deviation, SE = supported employment, TAU = treatment as usual.

and 1.5 ± 2.8 , $p < 0.24$, respectively), the differences were not statistically significant. Three SE participants reported at least 10 misdemeanor arrests before enrollment compared with one TAU participant. Primary reasons for misdemeanor arrests for SE and TAU participants were driving while intoxicated/under the influence and traffic violation (22.0% vs 22.9% and 36.0% vs 14.3%, respectively).

The study rate of felony arrest did not differ significantly between groups (SE, 27.2% vs TAU, 25.0%, $p < 0.86$) (Table 3). Although SE participants averaged more felony arrests (2.0 ± 1.6) and convictions (1.6 ± 1.3) than

Table 3.Legal history at baseline ($n = 157$).

Legal Event	SE ($n = 81$)	TAU ($n = 76$)	p -Value
Arrest, n (%)	37 (45.7)	37 (48.7)	0.71
Misdemeanor as Adult, n (%)	37 (45.7)	37 (48.7)	0.71
Arrests During Lifetime, Mean \pm SD	3.4 \pm 4.4	2.5 \pm 2.1	0.22
Convictions During Lifetime, Mean \pm SD	2.6 \pm 4.8	1.5 \pm 2.8	0.24
Type of Misdemeanor, n (%)			
Driving Under Influence	11 (22.0)	8 (22.9)	—
Manufacture/Delivery of Controlled Substance	0 (0.0)	0 (0.0)	—
Traffic Violation	18 (36.0)	5 (14.3)	—
Other	21 (42.0)	22 (62.9)	0.048
Felony as Adult, n (%)	22 (27.2)	19 (25.0)	0.86
Arrests During Lifetime, Mean \pm SD	2.0 \pm 1.6	1.8 \pm 1.0	0.62
Convictions During Lifetime, Mean \pm SD	1.6 \pm 1.3	1.4 \pm 2.6	0.74
Type of Felony, n (%)			
Possession of Controlled Substance	5 (22.7)	7 (31.8)	—
Aggravated Assault	4 (18.2)	1 (4.5)	—
Driving While Intoxicated	3 (13.6)	0 (0.0)	—
Other	10 (45.5)	14 (63.6)	0.33
Presently on Probation or Parole, n (%)	5 (6.2)	3 (3.9)	0.48
Probation	3 (60.0)	0 (0.0)	—
Parole	2 (40.0)	3 (100)	0.20

Note: Reported p -values were calculated using Student t -test, χ^2 , or Fisher Exact test.
SD = standard deviation, SE = supported employment, TAU = treatment as usual.

TAU participants, the difference was not significant (1.8 ± 1.0 , $p < 0.62$ and 1.4 ± 2.6 , $p < 0.74$, respectively). Two SE participants, compared with zero TAU participants, reported at least five felony arrests prior to enrollment. Primary reasons for felony arrests for SE and TAU participants were possession of controlled substance and aggravated assault (22.7% vs 31.8% and 18.2% vs 4.5%, respectively).

When legal history at baseline was compared between those who did and did not obtain CE, number of prior misdemeanor arrests did not differ (3.4 ± 4.7 vs 3.5 ± 3.1 , $p < 0.99$). However, among TAU participants, those participants obtaining CE reported significantly fewer prior misdemeanor arrests than non-CE TAU participants (1.0 ± 0.0 vs 2.6 ± 2.1 , $p < 0.004$). Among those reporting a misdemeanor arrest, results from an overall two-way ANOVA model containing terms for group and CE and an interaction term group by CE group suggest no association between CE and group status ($F = 0.59_{3,73}$, $p < 0.63$). Individual parameter results for condition ($F = 1.37$, $p < 0.25$) and CE ($F = 0.31$, $p < 0.58$) were both nonsignificant.

After adjustment for group status, CE and prior felony conviction were significantly associated (CMH $\chi^2 =$

7.4 , $p < 0.007$), those finding CE having a lower rate of conviction. A statistically significant difference was observed between ever being convicted of a felony and CE after adjustment for group status ($p < 0.007$) (Table 4). Among both SE and TAU, those obtaining CE were less likely to have a prior felony conviction than those who did not obtain CE (19.1% vs 30.0 percent, $p < 0.16$, and 12.5% vs 26.5%, $p < 0.15$, respectively).

Among those reporting a felony conviction, an overall two-way ANOVA model containing terms for group and CE and an interaction term group by CE group suggest no statistically significant association between CE and group status ($F = 0.94_{3,37}$, $p < 0.43$). Individual parameter results for group ($F = 0.25$, $p < 0.62$) and CE ($F = 1.89$, $p < 0.18$) were not significant.

Though the number of Veterans with felony convictions is relatively small, descriptive evidence suggests the effect of felony history on CE across conditions: for those with felony convictions, 6.7 percent of SE Veterans found employment compared with 5.2 percent of TAU Veterans. This is far less than those without felony history who obtained CE: 28.8 percent of SE Veterans and 12.2 percent of TAU Veterans.

Table 4.Legal history of participants obtaining competitive employment (CE) within 12 mo ($n = 157$).

Legal Event	SE ($n = 81$)			TAU ($n = 76$)		
	CE, No ($n = 60$)	CE, Yes ($n = 21$)	<i>p</i> -Value	CE, No ($n = 68$)	CE, Yes ($n = 8$)	<i>p</i> -Value
Arrested, <i>n</i> (%)	29 (48.3)	8 (38.1)	0.35	34 (50.0)	3 (37.5)	0.49
Misdemeanor as Adult, <i>n</i> (%)	29 (50.0)	8 (38.1)	0.35	34 (50.0)	3 (37.5)	0.17
Arrests During Lifetime, Mean \pm SD	3.4 \pm 4.7	3.5 \pm 3.1	0.67	2.6 \pm 2.1	1.0 \pm 0.0	0.004
Convictions During Lifetime, Mean \pm SD	2.7 \pm 5.3	2.3 \pm 2.6	0.22	1.6 \pm 2.9	0.3 \pm 0.6	0.33
Felony as Adult, <i>n</i> (%)	18 (30.0)	4 (19.1)	0.16	18 (26.5)	1 (12.5)	0.15
Arrests During Lifetime, Mean \pm SD	2.1 \pm 1.7	1.5 \pm 1.0	0.12	1.9 \pm 0.9	2.0 \pm 0.0	0.36
Convictions During Lifetime, Mean \pm SD	1.8 \pm 1.3	1.0 \pm 1.4	0.22	1.4 \pm 2.7	2.0 \pm 0.0	0.40
Presently on Probation or Parole, <i>n</i> (%)	4 (6.7)	1 (4.8)	—	3 (4.4)	0 (0.0)	—
Probation	2 (3.3)	0 (0.0)	0.98	3 (4.4)	0 (0.0)	0.55
Parole	2 (3.3)	1 (4.8)	0.71	0 (0.0)	0 (0.0)	—

Note: Reported *p*-values were calculated within treatment group using Student *t*-test or χ^2 .

SD = standard deviation, SE = supported employment, TAU = treatment as usual.

Vocational Services

All participants reported receiving at least one visit from a vocational provider during the study period. Participants in the SE condition had 3.5 visits on average, compared with 1.3 for TAU participants. During the study period, the IPS fidelity scale ratings ranged from 61 to 64, indicating the SE programs at the interventional sites were within the upper portion of the “fair” range of implementation for the IPS SE model.

DISCUSSION

Improving vocational outcomes for Veterans with significant barriers, especially for those with multiple significant limitations, is of critical importance to the field of rehabilitation and to social integration. This study is the first to evaluate the combination of one of the most devastating medical conditions related to employment, SCI, and perhaps the most deleterious psychosocial barrier, felony history.

Using data collected during a prospective, randomized clinical trial (SCI-VIP) to examine whether SE is more effective than TAU in returning Veterans with SCI to CE, this study served two broad purposes. The first was to describe a rate of criminal history in Veterans with SCI seeking employment services in the SCI-VIP study. This is the first study where the prevalence of legal history, both arrests and convictions, has been documented in a sample of Veterans with SCI seeking employment. The findings show a high rate of arrests and convictions. Specifically, more than 47 percent reported at least one

past arrest and more than 25 percent reported at least one felony conviction.

The second purpose was to evaluate the effects of legal involvement on employment among job-seeking Veterans with SCI. The findings suggest that not only were Veterans with felony convictions less likely to find employment in the TAU condition, but also the use of SE did not fully ameliorate this barrier in the SE condition. Though the sample size was too small to make strong inferences, the data suggest that felony convictions remain a substantial barrier for success, even when evidence-based SE is provided. Though speculative, many of the barriers encountered by those with felony histories likely remain even when SE is provided. Those with felony histories still may have fewer available fields of employment because of statutory factors, a limited range of perceived employment options, and out-of-date skills. Also, IPS staff training may need to incorporate specialized ways of approaching employers about Veterans with felonies to ameliorate the concerns related to this domain. Studies evaluating the incorporation of IPS principles into vocational rehabilitation for Veterans with felony histories are ongoing.

The study has several limitations. The study included primarily male Veterans, which may not represent other SCI populations regarding potential for employment, such as female Veterans with SCI. However, because the majority of those with felony history are male, the sample is generally representative of those with combined barriers. Lastly, our study was conducted in large urban centers where transportation and employment opportunities may be easier than in rural areas.

CONCLUSIONS

The evidence from this study suggests the need for increased evaluation of the effect of multiple serious barriers, in this case the combination of legal history and physical disability on employment success. Larger samples of Veterans will be required to fully evaluate whether multiple barriers are additive or interactive and whether vocational programs such as SE can ameliorate the effect of these barriers. A more in-depth evaluation is critical to refining and improving vocational rehabilitation techniques. Additionally, a more detailed evaluation of legal history, including more data on crime history, lifetime incarceration, and recent incarceration should be obtained to determine specific contributors to unemployment in Veterans with SCI and felony history.

The current study should encourage increased focus on biopsychosocial comorbidities with SCI. Similar to the complications encountered when treating medical patients with multiple medical needs, vocational rehabilitation for those with multiple barriers may require modification of existing techniques and development of new innovations to reach and serve those with multiple employment barriers. The continued evaluation of the effects of these multiple barriers will improve outcome for vulnerable Veterans seeking employment.

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