Community Mental Health Journal (2019) 55:1236–1245
https://doi.org/10.1007/s10597-019-00439-z

ORIGINAL PAPER

Predictors of Post-Treatment Employment for Individuals with Substance Use Disorders

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Received: 16 January 2018 / Accepted: 27 June 2019 / Published online: 2 July 2019

Abstract
This study examined the influence of gender, post-treatment issue severities, and treatment participation rate on the post-treatment employment status of consumers with substance use disorders. The study analyzed the archival data of 100 unemployed and underemployed participants from a substance abuse intensive outpatient program. We found significant differences in the characteristics of gender, severity of alcohol use, drug use, psychiatric issues, and treatment participation rate. Female gender and low treatment participation rates negatively predicted employment. This study increased understanding about the interplay of alcohol, drug, and psychiatric influences on post-treatment employment status.

Keywords Substance use disorders · Psychiatric issues · Employment · Treatment participation rate

Introduction

The number of illicit drug users has increased rapidly in recent decades, rising from 11 million in 1996 to 56.3 million in 2016 (SAMHSA 2017). Many states have expanded the number of treatment services and supports to help individuals with substance use disorders (SUDs; Richardson et al. 2012). More serious issues of individuals with SUDs is that they are likely to experience co-occurring disorders (Funn and Woodruff 2011; Sheidow et al. 2012). To address such issues, integrated treatment programs (e.g., vocational services, relapse prevention services, cognitive behavior therapy, and 12-step facilitation) have been developed, refined, and evaluated (Staring et al. 2012; Mueser et al. 2014; Mueser and McGurk 2014). These programs are beneficial to reduce severe issues of alcohol use (Schuckit 2006) drug use (Baker et al. 2012), co-occurring psychiatric (McGovern et al. 2014; Mueser and McGurk 2014), and vocational issues (Kim 2014).

While individuals with SUDs report numerous motivations to cease use and maintain recovery from substances, the desire for employment has been demonstrated as being integral to success (Baldwin et al. 2010). Individuals with SUDs have reported that vocational training improves their self-esteem and inspires hope of recovery, so they are more likely to engage and participate in treatment (Kim 2014). Employed individuals with SUDs are more likely to have resources for recovery and feel less isolated from society than those who are unemployed (Rosenheck et al. 2006). McIntosh et al. (2008) note that employment confers numerous therapeutic benefits, such as being economically independent, gaining self-esteem, upgrading a daily routine, and improving physical health status. Other recent research has shown that entering the workforce encourages individuals to reduce alcohol and drug issue severity and move from unemployment with an unhealthy lifestyle to employment with a healthier lifestyle (He et al. 2010; Strickler et al. 2009).

Although employment is important to substance use recovery, the Substance Abuse and Mental Health Services Administration Office (2017) reported that in 2012 and 2016 only 21.4% and 24.8% of individuals with SUDs were employed. Thus, while social welfare programs can provide short-term assistance and stability to consumers, unemployment and underemployment continue to undermine their

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recovery (Baldwin et al. 2010; Hogue et al. 2010). Recently, researchers have identified gender (Baldwin et al. 2010); ethnicity (Niv et al. 2009); substance use severity (Pentz and Riggs 2013); psychiatric issue severity (McGovern et al. 2014); stigma of a SUD history (Hogue et al. 2010); lack of work history (Honey 2003); and lack of vocational skills (Rogers et al. 2011) as variables that influence employment. The comprehensive management of issues (e.g., substance use, psychiatric issues, and lack of vocational skills) is critically optimizing long-term employment outcomes (Rogers et al. 2011).

Although researchers have found the importance of these variables on employment, the influences of these variables have yielded inconsistent results. Thus, few integrated intervention plans have been developed and evaluated to improve employment-related outcomes. Clearly, researchers need to clarify the relationships between these variables (Campbell 2007; Hogue et al. 2010). By examining alcohol use, substance use, psychiatric issues, and lack of vocational skills in one study, we can determine how these predictors work in concert to predict employment outcomes. According to our literature review, we developed three categories of possible predictors: (a) demographic characteristics; (b) mental health issue severity; and (c) treatment participation rate.

Demographic Characteristics

Demographic and socioeconomic characteristics have been examined to find the salient predictors of employability (Biegel et al. 2010; Frounfelker et al. 2011). Previous researchers have suggested that consumers from minority groups have more employment challenges and lower employment rates than those from the majority group (Niv and Hser 2006; Niv et al. 2009). In addition, a higher education level is positively associated with employment: Individuals with a high school diploma are two times more likely to exit welfare for work than those without a diploma (Zabkiewicz and Schmidt 2007). Likewise, consumers with a post-secondary education are 1.76 times more likely to find jobs than those with only a high school graduate (Laudet 2012; Morgenstern et al. 2008).

Gender also predicts employment (Asakura et al. 2008; Coker et al. 2013). Females with SUDs are less likely to obtain employment than their male counterparts (Greenfield and Grella 2009). In addition, after being diagnosed with SUDs, females are also at greater risk than males of being terminated from a job (Baldwin et al. 2010). Thus, ethnicity, educational level, and gender have been shown to be important variables to consider when evaluating treatment effectiveness. While many studies on these variables have produced equivocal findings, a greater understanding of the influences of these variables should nevertheless help improve effectiveness of treatment practices.

Mental Health Issue Severities

Over the years, consumers' severity levels of alcohol use, drug use, and psychiatric symptoms have been used to predict employment outcome (Drake et al. 2013). Individuals with less severe alcohol, drug, and/or psychiatric issues are more likely to be employed than those with more severe symptoms (Kline-Simon et al. 2013). Specifically, Arria et al. (2013) examined the effect of drug use severity on employment and found the following unemployment rates for the three groups of study participants: 1.7% for non–drug users, 6.4% for infrequent marijuana users, and 10.1% for persistent drug users. In addition, researchers have suggested a negative relationship between psychiatric issue severity and employment (Barry et al. 2010). Likewise, individuals with co-occurring disorders are more likely to be unemployed than those with a single disorder (Sheidow et al. 2012). In general, these findings suggest a negative effect for severe SUDs and psychiatric issues on employment.

Treatment Participation Rate

While numerous studies have examined variables that negatively influence employability, relatively few have explored the influence treatment participation rate on employment (Tuten et al. 2012). Typically, approximately 60% of consumers complete SUD treatment (Tuten et al. 2012), and those consumers with severe substance use or psychiatric issue levels are even less likely to complete treatment (Chisolm et al. 2013). Low treatment participation rate was also significantly associated with negative post-treatment outcomes, such as a lower level of self-esteem and a higher level of alcohol and drug use (Rohde et al. 2012). Conversely, Richardson and Abraham (2012) found a positive relationship between treatment participation rate and employment after completing treatment. Building on these findings, many have concluded that developing a strategy of increasing treatment participation rate would be effective in improving post-treatment employment outcomes (Xie et al. 2010).

Based on the literature, we suggest that employment is influenced by three types of variables: demographic (gender, educational level, and ethnicity); severity issue levels (alcohol use, drug use, psychiatric issues); and treatment participation rate. We hypothesized that (1) after 210 days of treatment in a substance use intensive outpatient program (SAIOP) centered on vocational counseling services, are there significant differences between employed and unemployed consumers in the following variables: demographic characteristics, post-treatment issue severities, and

treatment participation rate? (2) Does adding treatment participation rate to a model consisting of demographic and consumer issue severity variables improve the overall model's effectiveness in predicting employment?

Methods

Design

This study utilized a longitudinal design with archived data collected in a small city in a southern state. In an outpatient clinic, Project Working Recovery (PWR), we used a quasi-experimental design to collect data over a 33-month period (from October 2007 to July 2010) by master's and doctoral rehabilitation counseling students who are qualified rehabilitation counselors or substance abuse and clinical counselors. The screening criteria for PWR indicated that participants were to (a) have a history of SUDs, (b) be medically and psychiatrically stable at time of project enrollment, (c) be aged 18 years or older, and (d) lack full-time employment at the time of intake.

Participants

Over the 33-month period, the study participants were recruited by contacting local substance abuse treatment agencies and the Division of Vocational Rehabilitation Services. The Brochures and related to information for the study, including the purpose of the project, its services and benefits, and enrollment information were delivered to the agencies by hand and fax.

Data Collection Procedures

The study procedures, instruments, informed consent form were reviewed and approved by the Institutional Review Board. Possible study participants who met the study criteria were screened. Eligible participants (a) signed the human subjects consent form; (b) completed a demographic questionnaire; and (c) filled out the PWR Evaluation Survey, which consisted of a question on employment status (unemployed, part-time, full-time) and the *Addiction Severity Index-5* (ASI-5; Dennis et al. 2013). At 210 days post-baseline, each study participant completed the PWR Evaluation Survey again.

Intervention

Based on consumers internal and external characteristics and symptoms, staff then developed and provided individualized treatment plans for reducing substance use issues and improving vocational skills. All participants received treatment integrating psychiatric, crisis contingency, disease management, relapse prevention, family counseling, and group support services, and engaged in various types of interventions from the vocational workbook *Working It Out* (Thum et al. 2000). Individuals were eligible to receive a maximum of 9 h of SUDs and vocational treatment a week, in 3-h-per-day increments, for 7 months.

Measures

Demographic Characteristics

For the logistic regression analyses, we coded demographic characteristics into binary variables: gender (0 = female or 1 = male); ethnicity (0 = African American or 1 = White); and education level (0 = less than a high school degree or GED, or 1 = earned a high school degree or GED).

Addiction Severity Index-5

The PWR Evaluation Survey was composed of an employment status question and the Addiction Severity Index 5 (ASI-5; McLellan et al. 1992), which measures severity levels of alcohol, drug, psychiatric, employment, family/social, legal, and medical issues over the past 30-days period. Participants answered the ASI-5 questions on issue severity using a five-point Likert scale of 0 (not at all) to 4 (extremely), such as *how troubled or bothered have you been in the past 30 days by the alcohol problem?* This study used composite scores calculated from the integrated ASI-5 questionnaire ranging from 0 (not an issue) to 1 (severe issue: McLellan et al. 1992). A composite score ≤ 0.04 is considered mild issues, scores > 0.04 but ≤ 0.24 are moderate issues, and scores > 0.24 are severe issues (Shah et al. 2013). The ASI-5 alcohol, drug, and psychiatric composite scores showed adequate concurrent and discriminant validity (Calsyn et al. 2004; Shah et al. 2013). This study focused on how much consumers' alcohol use composite score ($M = .18$, $SD = .17$, Cronbach's $\alpha = .92$), drug use composite score ($M = .21$, $SD = .15$, Cronbach's $\alpha = .85$), and psychiatric issue composite score ($M = .35$, $SD = .22$, Cronbach's $\alpha = .87$) on post-treatment employment.

Treatment Participation Rate

To calculate treatment participation rate, we tabulated each participant's number of session attendances, cancellations, and no-shows: [number of appointments kept/(number of appointment cancellations + number of no-shows + number of appointments kept)].

Employment Status

The PWR Evaluation Survey taken at baseline and post-treatment asked, 'What is your employment status?' Study participants selected one of the following answers: (1) unemployed, (2) employed part-time (30 h/week or less), or (3) employed full-time (more than 30 h/week). For the logistic regression analyses, answers were coded as 0 (unemployed) or 1 (employed either part-time or full-time).

Data Analysis

To predict employment status in the first research question, we did a Pearson χ^2 analysis and student t test using the following variables: (a) demographic characteristics (i.e., gender, ethnicity, educational level, and age); (b) severity levels of consumer issues (i.e., alcohol use, drug use, and psychiatric issues); and (c) treatment participation rate. For the second question, to determine if treatment participation rate could improve the predictive value of demographic and consumer-issue variables, including interaction variables, we developed two models using the backward stepwise method, a procedure used to modify and find the best model from a full starting model (Menard 2010). In the first model, we used logistic regression to determine the relationship between the dependent variable of employment status and the following independent variables: gender, ethnicity, educational level, alcohol use, drug use, psychiatric issues, alcohol use × drug use, and alcohol use × psychiatric issues. Because of the limited sample size, one interaction (drug use × psychiatric issues) was not included in the analysis. To create the second model, we added the treatment participation rate to the first.

Results

Between October 1, 2007, and July 30, 2010, PWR enrolled a total of 313 participants. Of these, 207 failed to complete the post-treatment evaluation survey at 210 days and were excluded from our study, leaving 106 who completed treatment. Because they were most representative of the consumers served by this clinic in the southeastern state, we used data only from the 100 who identified themselves as African American or White. The other 6 had identified themselves as other. Of these 100 participants, 55 were male and 45 were female, ranging in age from 21 to 62 years ($M = 41.1$ years, $SD = 10.7$). Participants identified their ethnicity as follows: 55 as African American, and 45 as White. In terms of education, 76 had earned a high school degree or General Educational Development certificate (GED), and 24 had not.

Descriptive Analysis of Employed and Unemployed Consumers' Characteristics

From baseline to post-treatment, a significant increase occurred in the employment rate ($\chi^2 = 24.521$, $p < .001$). At baseline, 8 of 100 participants were employed, working part-time; at post-treatment, 25 were employed (10 part-time and 15 full-time). Interestingly, the 8 working part-time at baseline all finished with full-time jobs. Table 1 depicts percentages, means, and standard deviations of predictor variables, and shows significant differences between employed and unemployed individuals based on post-treatment composite scores for severity levels of alcohol use ($p < .05$), drug use ($p < .01$), and psychiatric issues ($p < .01$), and for treatment participation rate ($p = .004$).

Two Logistic Regression Models Predicting Post-Treatment Employment

First Model

In the first model, which excluded treatment participation rate, the recoded binary demographic and continuous symptom-severity variables significantly predicted post-treatment employment, $\chi^2 = (5, N = 100) = 76.54$, $p < .001$. The model as a whole successfully predicted the employment status of 93 participants, correctly classifying 95.9% of those unemployed and 84.6% of those employed. In the logistic regression, five variables were significant at the $p < .05$ or $p < .01$ level based on the Wald χ^2 test: gender; alcohol use; drug use; and the two interaction variables, alcohol use × drug use and alcohol use × psychiatric issues. Table 2 shows the logistic regression coefficients, standard error, and odds ratio of each predictor, and the overall fit for both models.

In this model, gender was a significant predictor: males were 5.97 times more likely to be employed than females. Four variables based on the ASI-5 severity composite scores and their interactions were also significant: As increasing participants' alcohol use composite score, they are .27 times less likely to be employed. Likewise, as increasing participants' drug use composite score, they are .36 times less likely to be employed. Including the alcohol use × drug use and alcohol use × psychiatric issue interaction terms significantly improved the model's effectiveness. The interactions of these variables both predicted a lower likelihood of employment than that predicted separately by the main effects: as increasing alcohol use × drug

Table 1 Post-treatment characteristics of employed and unemployed consumers

	Employed ($n=25$)	Unemployed ($n=75$)	Sample ($N=100$)
Categorical variables	*n* (%)	*n* (%)	*n* (%)
Gender*			
Female	9 (20.0%)	36 (80.0%)	45 (100.0%)
Male	16 (29.1%)	39 (70.9%)	55 (100.0%)
Ethnicity			
African American	11 (20.0%)	44 (80.0%)	55 (100.0%)
White	14 (31.1%)	31 (68.9%)	45 (100.0%)
Education			
< High school diploma/GED	5 (20.8%)	19 (79.2%)	24 (100.0%)
≥ High school diploma/GED	20 (26.3%)	56 (73.7%)	76 (100.0%)
Continuous variables	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Age	40.3 (10.9)	41.5 (10.3)	41.1 (10.7)
Mean ASI-5 composite score			
Alcohol use level*	.07 (.05)	.27 (.13)	.18 (.17)
Drug use level**	.08 (.01)	.32 (.16)	.21 (.15)
Psychiatric issue level**	.13 (.11)	.42 (.20)	.35 (.22)
Treatment participation rate**	.66 (.15)	.38 (.13)	.45 (.19)

ASI-5 composite score, from 0 (not an issue) to 1 (severe issue)

*$p < .05$

**$p < .001$

Table 2 Results of logistic regression analyses of predictors

Variables	First model			Second model		
	B	*SE*	Odds ratio	*B*	*SE*	Odds ratio
Demographic						
Gender	1.79*	1.04	5.97	2.42	1.47	11.28
Consumer issue severity level						
Alcohol use	−1.32*	.55	.27	−1.49	.74	.23
Drug use	−1.02**	.35	.36	−1.21*	.47	.30
Alcohol × drug use	−.47**	.17	.63	−.46*	.21	.42
Alcohol × psychiatric issue	−.41*	.19	.67	−.44*	.21	.65
Treatment participation rate	–	–	–	.89**	.37	2.43
Overall model χ^2	χ^2 (5, $N=100$) = 76.54***			χ^2 (6, $N=100$) = 84.67***		

Binary variables: Gender, 0 = female, 1 = male; *Variables that did not reach significance:* first model, ethnicity, educational level, psychiatric issue; second model, ethnicity, educational level, alcohol use, psychiatric issue

*$p < .05$

**$p < .01$

use and alcohol use × psychiatric issue interactions, they are .63 and .67 times less likely to enter the workforce.

Second Model

Creating a second model by adding treatment participation rate improved the overall model fit, χ^2 (6, $N=100$) = 84.67, $p < .001$. This model was superior to Model 1 because it correctly predicted the employment status of 96 of the 100 participants, 3 more than the first model, correctly classifying 98.6% of those unemployed and 88.5% of those employed. Based on the Wald χ^2 test, five variables were significant, three of them (drug use, alcohol use × drug use, and alcohol use × psychiatric issue severity) at the $p < .05$ level, and one (treatment participation rate) at the $p < .01$ level. Interestingly, although the alcohol use level was a

significant predictor of employment in the first model and in several other studies (Lopez-Goni et al. 2011; Schulte et al. 2010), the main effects of this issue did not reach a significance ($p = .57$).

In this second model, males were 11.28 times more likely to be employed than females while no statistical significance was found. Likewise, as increasing participants' drug use composite score, they are .30 times less likely to be employed. Including the alcohol use × drug use and alcohol use × psychiatric issue interaction terms significantly improved the model's effectiveness. The interaction of these variables both predicted a lower likelihood of employment than that predicted separately by the main effects: as increasing alcohol use × drug use and alcohol use × psychiatric issue interactions, they are .42 and .65 times less likely to enter the workforce. The added variable of treatment participation rate was the most powerful predictor: as increasing participants' attendance rates, they are 2.43 times more likely to be employed.

Discussion and Suggestions for Practice

The purpose of this study was to explore different characteristics between employed and unemployed consumers with SUDs and to find significant predictors of post-treatment employment. There was a significant improvement of employment after treatment. In our two different models using demographic variables, severity issue levels, and treatment participation rate as predictors of employment, we found the following results to have important implications for the development of best practices:

First, in terms of demographic characteristics, our study had some interesting findings. While some studies have suggested that ethnicity (Niv and Hser 2006; Niv et al. 2009) and educational level (Zabkiewicz and Schmidt 2007) are important predictors of employment for consumers with SUDs, these variables did not significantly improve overall fit for either of our models. Gender, however, was a significant predictor in the first model. Males were almost six times more likely to be employed than females. Other studies also found similar findings that male show higher employment rate compared to female because male have more job and internship opportunities to be employed full-time (Campbell 2007; Greenfield and Grella 2009; Hogue et al. 2010). Our study underscores the need for clinicians and researchers to better address the numerous barriers to employment female face (e.g., limited vocational opportunity and low job retention rate), whether because of gender role expectations and negative stereotypes about females with SUDs.

Second, we did not find the main effect of psychiatric issue severity to be a significant predictor of employment compared to other studies (Biegel et al. 2010; Rogers et al. 1997). The reason might be that this study's participants were only screened for a history of SUDs and not for co-occurring psychiatric disorders. We assumed that some individuals in this study might have both SUDs and psychiatric issues, but others might not. Although AIS-5 helps us assess participants' psychiatric issue levels, the scale is not used for diagnosing psychiatric disabilities or co-occurring disorders. However, we could expect that high ASI-5 composite scores represent severe issues.

Also, this study found that alcohol use severity predicted employment status (Lopez-Goni et al., 2011; Schukit 2006). In our first model, alcohol use severity was a significant predictor ($p < .05$), but in the second model, it was not ($p = .057$). Thus, when treatment participation rate was added to the model, we found that this treatment participation mediated the effect of alcohol use severity on employment status. We did find that individuals with higher post-treatment ASI-5 composite scores for drug use were less likely to be employed. This finding is consistent with earlier studies indicating significant relationships between severity levels of drug use and employment (McCutcheon et al. 2009; Redonnnet et al. 2012).

Third, perhaps more interesting than the main effects were the results of the two interaction terms, alcohol use × drug use and alcohol use × psychiatric issue severity. Our interaction results refine those of previous studies suggesting that employment is affected by consumers' misuse of alcohol (Torvik et al. 2012) and drugs (McCutcheon et al. 2009; Redonnnet et al. 2012). In that, the drug use severity of consumers depended on whether they were they had alcohol use issues because the interaction of these variables predicted whether or not the consumers were unemployed. Likewise, our interaction results on severity levels of alcohol use × psychiatric issues refine the results of previous studies suggesting that individuals with these co-occurring disorders are at higher risk for unemployment (Becker et al. 2005) and less likely to enter full-time employment (Biegel et al. 2010). In that, the psychiatric issue severity of consumers depended on whether they were they had alcohol use issues because the interaction of these variables predicted whether or not the consumers were unemployed.

We can suggest that researchers and clinicians should assess such interactions and consider these issues in developing treatment and employment plans. If two disorders coexist, clinicians should find a primary disorder and develop a treatment plan focusing on the main disorder because each disorder requires different and intensive treatments. Clinicians keep in mind that each consumer with co-occurring disorders is in different phases of treatment. For this population, the system to promote a longitudinal treatment and integrated dual primary treatments should be developed and provided (Minkoff 2001). Likewise, clinics either serving consumers with SUDs or psychiatric disorders would

promote the acceptance of those with co-occurring disorders rather than preventing them from existed treatment system applying rigid admission criteria (McGovern et al. 2014).

Fourth, underscoring the importance of treatment participation rate as a predictor, we found that participants with higher treatment participation rates were 2.43 times more likely to be employed. This result is consistent with earlier research finding strong relationships between high treatment participation rates and positive post-treatment outcomes, such as low alcohol and drug use severity levels and high expectation of employment (Defife et al. 2010) and increased employment (Chisolm et al. 2013). Also, this study suggested that individuals' employment status (under or unemployment) is a predictor of treatment participation. This is an encouraging finding, as this is a variable that therapeutic interventions can improve, and which clinicians can collaborate on with individuals with SUDs or co-occurring disorders. Many strategies to improve treatment participation rate have already been developed and successfully applied: appointment reminder calls (Lopez-Goni et al. 2011); positive reinforcement for continuing attendance (Magidson et al. 2011); and motivational interventions (Choi et al. 2013). Specifically, vocational services this study applied would tend to reinforce and encourage treatment participation, which is strongly related to employment as study findings (Rogers et al. 1997; Thum et al. 2000).

Last, our study found that all eight participants employed part-time at baseline were employed full-time at the 210-day post-treatment. Therefore, we suggest that a SAIOP centered on vocational counseling services might be an effective transitional intervention for underemployed individuals with SUDs as well as for chronically unemployed individuals with SUDs, benefiting both in improving their relative vocational skills.

Limitations

There are limitations to the current study. First, archival clinical data were used for this investigation, which might include coding and typing errors. Specifically, with regard to over 60% attrition rate, it represents that over 200 people began but did not complete the treatment. Although the study enrolled more than 300 participants in its 3-year duration, the length of the program may have increased dropout rate and final sample is small so that the sample is likely a biased one and not representative of consumers with SUDs. Second, the generalizability of study findings may be limited to some extent due to a quasi-experimental, one group pre-post research design used in gathering the original data. Although a randomized controlled trial has been the gold standard of clinical research, quasi-experimental methods are used increasingly to explore new ideas and serve as a preliminary step for later clinical trials (Kline 2004). Third, although self-report instruments such as the ASI-5 are commonly used in research because of their ease of use, study participants may positively overstate treatment effectiveness (Wand et al. 2010). In order to reduce this potential concern, a greater variety of scales should be used to examine perspectives of consumers and clinicians. Fourth, because this study found no significant effect of some predictors (i.e., alcohol use and gender) on employment, a larger sample would be required to investigate a more clear direction of individuals' characteristics and issues on employment. Fifth, a causal relationship between alcohol, drug, and psychiatric issue severities on employment status would be necessary because issue severities use severity and employment status might influence each other.

Recommendations for Future Research

Previous literature has noted that a few research investigated influences of demographic factors and issue severity levels on treatment outcomes. The current study provides evidence that an innovative approach, including treatment participation to the treatment of SUDs can improve treatment outcomes and elicits some recommendations to be examined in future studies. First, as the small number of sample in this study yields low generalizability, future research using a larger sample would further explain the influence of demographic and interactions of issues beyond that of issue severities. A study to explore the differences between individuals who completed the services and others who did not is also required. Second, by decreasing the number of days between the pre- and post-test, future researchers could perhaps decrease the drop-out rate and increase the number of participants completing treatment. Researchers would then be able to analyze other complex interactions (e.g., alcohol use × drug use × psychiatric issues) to clarify their influence on employment. Third, by increasing sample size, researchers might be able to gather more information on variables whose level of significance was between $.05 < p < .10$.

Conclusion

After treatment, there are significant differences between employed and unemployed consumers with SUDs in gender, post-treatment issue severities, and treatment participation rate. In addition, female gender and low treatment participation rate are especially important negative predictors of employment, and studying interactions helps us to understand the interplay of alcohol, drug, and psychiatric influences on post-treatment employment. As demonstrated by Magura et al. (2004), successful recovery from SUDs and

related disorders is most effective when multidimensional treatment approaches, which consider multiple issues of consumers, are utilized.

Funding This work was supported by Incheon National University Research Grant in 2015.

Compliance with Ethical Standards

Conflict of interest All authors declare that they have no conflict of interest.

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