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Stability of Outcomes Following Residential Drug Treatment For Patients with Co-occurring Disorders

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Abstract

Objective—Few studies have examined the stability of both substance use and mental health outcomes following residential drug abuse treatment for individuals with co-occurring disorders (COD). This study examines outcomes at 6 and 12 months for individuals with COD, in relationship to services received over the follow-up period.

Methods—Participants with COD (N=310) were sampled from 11 residential drug abuse treatment programs and completed in-depth assessments within 30 days of intake and at 6- and 12-month follow-ups. A path model was developed testing the relationships among treatment participation and services received, psychological status, and substance use outcomes across the two follow-up points.

Results—Retention for at least 90 days in residential drug treatment was associated with less inpatient mental health treatment and more mental health services received at 6 months; outpatient mental health treatment was associated with reduced substance use at 6 months. Substance use at 6 months was associated with more psychological distress at both 6 and 12 months and more inpatient mental health treatment at 12 months.

Conclusions—Findings suggest that receipt of mental health services following residential drug abuse treatment for patients with COD is critical to improving their longer-term outcomes.

Keywords

co-occurring disorders; residential substance abuse treatment; mental health services; longitudinal outcomes; path model

Introduction

Individuals with psychiatric disorders are increasingly being treated within substance abuse treatment programs (Havassy, Alvidrez, & Owen, 2004; McGovern, Xie, Segal, Siembab, & Drake, 2006; Timko, Lesar, Calvi, & Moos, 2003). Moreover, there is growing attention to improving program capacity to provide services to these patients within substance abuse treatment programs (Gotham, Claus, Selig, & Homer, 2010) as well as recognition of the

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Mr. Shi was employed by the University of California while he worked on the statistical analyses for this paper. He is presently employed by Amgen Corporation in Thousand Oaks, CA.

need to provide continuing care to these patients following their discharge from treatment (Drake et al., 2001). Studies of patients with co-occurring disorders (COD) have shown that longer stays in treatment and more participation in aftercare services are associated with better posttreatment functioning (Moos, Finney, Federman, & Suchinsky, 2000; Grella, Stein, Weisner, Chi, & Moos, 2010). In addition, more psychiatric services and participation in 12-step/self-help groups following treatment are associated with better outcomes among individuals with COD (Chi, Satre, & Weisner, 2006; Laudet et al., 2004; Ray, Weisner, & Mertens, 2005; Ritsher, McKellar, Finney, Otilingam, & Moos, 2002).

Efforts to improve treatment for this population have included matching patients to programs of differing levels of intensity based on their symptom severity (Timko & Sempel, 2004) and modifying residential treatment for patients with COD (Blankertz & Cnaan, 1994; DeLeon, Sacks, Staines, & McKendrick, 2000; McCoy et al., 2003). Extending length of stay in residential treatment and allowing for multiple readmissions have also yielded improved post-treatment outcomes (Brunette, Drake, Woods, & Harnett, 2001; Davis, Devitt, Rollins, O'Neill, Pavick & Harding, 2006). Additionally, a comprehensive review of studies of residential treatment for individuals with COD showed that a higher level of services integration yielded better outcomes (Brunette, Mueser, & Drake, 2004).

This paper extends prior findings from a study showing that patients with COD who were treated in residential drug treatment programs that provided on-site “dual diagnosis” services had longer treatment retention and more mental health services utilization over a 6-month follow-up period (Grella & Stein, 2006). The current study examines the stability of posttreatment outcomes in relationship to ongoing services utilization over a 12-month period. We hypothesize that more mental health service utilization is associated with better mental health and substance use outcomes over the observation period.

Methods

Procedures

Study participants were sampled from 11 residential drug abuse treatment programs for adults within Los Angeles County. Prospective study participants were screened for indicators of mental disorders (i.e., use of medications for a psychiatric problem, referral from a mental health provider, past inpatient treatment).¹ Baseline interviews were conducted on-site with participants within 2 – 30 days after admission. Participants received payment of \$40 in non-cash vouchers for the baseline interview. Face-to-face follow-up interviews (lasting an average of 2-3 hours) were scheduled with participants at 6 and 12 months following treatment intake; participants were paid \$50 in non-cash vouchers for each of these interviews, which were conducted in a variety of locations depending upon the individual's circumstances (e.g., in personal homes, treatment programs, public places, jail or prison).

With regard to human subjects procedures: (1) the study procedures were thoroughly discussed with potential participants at the time of recruitment and screening; (2) written informed consent was obtained after this discussion at study intake; and (3) the study was conducted in accordance with the Declaration of Helsinki and was reviewed and approved by the UCLA Institutional Review Board. A federal Certificate of Confidentiality was obtained to protect subject confidentiality.

¹Administrative records obtained from the state Department of Mental Health verified that 97% of the sample had received treatment within the public mental health system.

Study Programs

Study programs were recruited from among those that had participated in a countywide initiative to improve service delivery to individuals with COD by designating “partnerships” between addiction and mental health providers in the same geographic areas (Grella & Gilmore, 2002). Static capacity of the programs ranged from 30 to 309 (Mean = 119, SD = 89) and estimates of the proportion of patients who had co-occurring disorders ranged from 10 percent to 100 percent (Mean = .40, SD = .34). All programs provided a minimum of 90 days of residential treatment, were abstinence-based, and generally adhered to an eclectic treatment approach that emphasized 12-step recovery principles, along with varying degrees of emphasis on counseling and rehabilitation services (Gil-Rivas & Grella, 2005; Grella & Stein, 2006).

Participants

The original study sample comprises 400 adult men and women who were consecutively recruited from study programs from August 1999 to April 2002. Participants (N = 310) were included in the present analyses who had data at all time points. Among the remainder, 5 refused to participate in the follow-up, 3 were deceased, 2 could not be scheduled, and 80 were either too ill to participate or were not located for follow-up. Comparisons between those who were included in and excluded from the follow-up sample showed no significant differences between groups on socio-demographics (i.e., age, gender, ethnicity, employment in the year preceding treatment entry); background characteristics (i.e., baseline frequency of drug and/or alcohol use, number of lifetime drug/alcohol treatment episodes); psychological symptoms (i.e., anxiety and depressive symptoms at baseline); lifetime trauma exposure, treatment duration, or the index treatment program from which they were sampled.

The average age of the participants was 36.2 years ($SD = 8.7$). Slightly over half (52.3%) were male. Thirty-four percent were African American, 47% white, 11% Latino, and 8% were of other ethnicities. Approximately three-fifths (59%) of the participants were currently involved with the criminal justice system; the majority (62%) had been homeless in the year prior to admission. About one third (34%) of the sample had less than a high school degree. About one quarter (27%) had received SSI disability payments in the year prior to admission.

Participants were assessed on the Structured Clinical Interview for the DSM-IV Axis I Disorders – Patient Edition (SCID-I/P, Version 2.0; First et al., 1997) for mood, psychotic, posttraumatic stress, and substance use disorders. In the study sample, 27% were assessed with a primary psychotic disorder and 73% had a diagnosis of primary mood. Over half (52%) also met criteria for lifetime posttraumatic stress disorder (PTSD) and 38.5% for current PTSD.

Regarding lifetime substance use disorders, 70% met criteria for alcohol dependence, 65% for cocaine dependence, 44% for cannabis dependence, 42% for amphetamine dependence, 29% for opioid dependence, and 25% for sedative dependence. Regarding substance use in 6 months prior to treatment admission, 67% used alcohol to intoxication, 50% used crack/cocaine, 52% used cannabis, 34% used amphetamines, 20% used heroin/other opioids, and 22% used tranquilizers. Background characteristics of the study sample have been described in-depth previously (Grella, 2003).

Measures

Parallel measures were administered at the intake and follow-up assessments at 6 and 12 months; time frames generally refer to the prior 6-month period, unless indicated below.

Alcohol and drug (AOD) use and treatment—Any self-reported alcohol or drug use, or a positive urine drug test at the time of the follow-up interviews, was coded as 1 = yes, 0 = no. Alcohol and/or drug treatment received included short-term inpatient, residential, methadone, and outpatient treatment. Additional questions asked about participation in 12-step groups and whether the respondent had lived in a sober living facility for 3 or more months.

Mental health treatment—Any inpatient treatment received was coded as 1 = yes, 0 = no. Outpatient mental health treatment was coded as 1 = treatment received for 12 or more weeks during the 6-month follow-up period, 0 = treatment for less than 12 weeks.

Arrests—Number of arrests was assessed in 6- and 12-month follow-up interviews.

Treatment retention—Time in the index treatment episode was dichotomized as 1 = equal to or greater than 90 days, 0 = less than 90 days. This variable was dichotomized at 90 days as prior research has shown that this threshold is associated with improved outcomes among patients treated in residential drug treatment programs (Simpson et al., 1999). Slightly over half of the sample (52%) spent at least 90 days in the index treatment episode, with a mean time in treatment of 93.1 (SD=52) days.

Psychological distress—Psychological distress was assessed with the *Brief Symptom Inventory (BSI*; Derogatis & Melisaratos, 1983). Respondents rate 53 items on a 5-point Likert scale as to how much each symptom distressed them during the previous week. The summed *Global Severity Index* was used as an indicator of overall psychological distress.

Statistical Analyses

First, descriptive analyses (frequencies) were used to evaluate the range and rate of exposure to treatment, substance use, criminal justice involvement, and psychological distress at baseline (assessed for lifetime exposure) and at the 6- and 12-month follow-ups (assessed with regard to prior 6 months).

We next assessed intraclass correlations (ICCs) among the patient characteristics and outcomes to ascertain whether a multilevel model would be appropriate given that the patients were nested within different programs. When ICCs for a dependent variable are negligible across organizational units and cluster size is small, multilevel models are not appropriate or necessary (Kreft & de Leeuw, 1998; Snijders & Bosker, 1999). The ICCs were small for all dependent variables, with a mean of .03; the only large ICC was .19 for African Americans, indicating that individuals of similar ethnicity tended to cluster within programs.

Next, a path model predicting the relationship between treatment/services utilization at 6- and 12-month follow-ups with mental health and AOD outcomes was tested using MPlus version 3.11 (Muthen & Muthen, 2004). The model was developed a priori and required minimal adjustment to obtain an acceptable level of fit; path selection/deletion consisted mainly of participant characteristics (e.g., gender, age, education level, diagnosis, criminal justice involvement) as potential covariates. Only one such variable (education level) had a significant path coefficient and was retained in the final model. Treatment retention of 90 days or more in the index residential drug treatment program was entered into the model to test its direct and indirect effects with the outcomes, given that time in treatment may account for observed outcomes, rather than services received. For the dichotomous variables in the path model (i.e., inpatient mental health treatment, outpatient mental health treatment, AOD use, treatment retention of 90 days or more), the regression coefficients can be

interpreted as log (odds); otherwise, the coefficients represent standardized parameter coefficients (i.e., BSI scores).

Model fit was assessed with the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Weighted Root Mean Square Residual (WRMR). Both the CFI, which ranges from 0 to 1, and the TLI are considered acceptable if they are above 0.90. RMSEA values below .06 indicate satisfactory model fit (Steiger & Lind, 1980). WRMR indicates a good fit if it is below 0.90.

Results

Descriptive Analyses

The status of study participants on key measures at baseline and the two follow-up points are shown in Table 1. We note that comparisons between baseline levels (which were typically measured for lifetime) and follow-up (which were measured with regard to prior 6 months) are non-comparable, with the exception of the measure of psychological distress (BSI). This measure decreased after entry into the index treatment episode from a mean of 77.5 (SD = 41.5), to 57.9 (SD = 39.9) at 6-months, and 56.6 (SD = 40.7) at 12-months.

A majority of the sample had prior experience in substance use disorder and mental health treatment (both inpatient and outpatient), as well as participation in 12-step groups at baseline. At 6 months, 27% of the sample had received some type of AOD treatment in the previous 6 months (not including the index treatment episode), whereas just under a quarter of the sample received additional AOD treatment in the subsequent 6-month follow-up period. Residence in a sober living facility was approximately stable over the two follow-up points, however, participation in 12-step groups decreased from 95% at 6-month follow-up to 76% at 12-month follow-up.

About two-thirds of the sample (67%) reported receiving at least 12 weeks of outpatient mental health treatment at the 6-month follow-up, which decreased to 56% at the 12-month follow-up. In contrast, inpatient mental health treatment increased from one quarter of the sample at 6-months to 30% at 12-months.

The rates of AOD use and of any arrests both gradually increased between the two follow-up points. Those reporting any AOD use went from 59% of the sample to 62%, while the proportion reporting any arrest increased from 20% up to 22%.

Path Model Findings

The final model with all significant paths is shown in Figure 1. At 6-month follow-up, staying at least 90 days in the index treatment episode and receiving at least 12 weeks of outpatient mental health treatment were associated with lower substance use, while receiving inpatient mental health treatment was strongly associated with more AOD use. In turn, more AOD use at 6 months predicted more psychological distress at 6 months, more inpatient mental health treatment prior to the 12-month interview, and more psychological distress at 12 months. At 12 months, inpatient mental health treatment predicted lower psychological distress.

An evaluation of the model fit statistics showed that the final path model had a satisfactory fit, with CFI = 0.947, TLI = 0.925, RMSEA = 0.048, and WRMR = 0.831.

Discussion

Study findings showed that patients with COD who receive outpatient mental health services following residential substance abuse treatment are less likely to have a subsequent hospitalization for mental health treatment or to be actively using AOD at 6 months. The study also showed that relapse to substance use at 6 months was associated with poorer psychological status at both 6 and 12 months. We note that this relationship may be bidirectional, in that poorer psychological functioning may lead to relapse or vice versa. Moreover, individuals who reported substance use at 6 months were more likely to have a subsequent inpatient mental health episode. These findings on the relationship of mental health services to longitudinal outcomes are significant as recent research shows that patients with COD who are treated in substance abuse programs are underserved within the mental health system (Havassy, Alvidrez, & Mericle, 2009).

Study Limitations

Study participants were sampled from diverse residential programs within a large urban area, however, the study findings may not generalize beyond this specific sample. Further, patients in this sample had long histories of substance use and nearly all had multiple prior treatment episodes for both mental health and substance use disorder problems (Grella, 2003). We attribute this to the relatively high threshold of substance use severity that is typically required for admission to residential drug treatment. Thus, some variables that may normally differentiate treatment outcomes among patients with COD were not included in our model because of a lack of variability within this sample. As with all studies that use self-report data, there are inherent limitations due to lack of self-disclosure or poor recall. Lastly, the observational nature of the study design limits the ability to draw causal inferences.

Conclusion

Substance abuse programs are increasingly called upon to provide treatment for individuals with COD and those with the most severe substance use disorders are likely to be treated in residential programs. The study findings provide evidence that patients with COD can be successfully treated in these settings and that their treatment outcomes are enhanced by more continuing engagement in outpatient mental health services following residential treatment.

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Figure 1.
6- and 12-Month Outcomes of Patients with Co-Occurring Disorders (N = 310)

Table 1

Status of Study Participants at Baseline and 6- and 12-Month Follow-ups (N = 310)

	Baseline ¹		6 Month		12 Month	
	N	% or Mean (SD)	N	% or Mean (SD)	N	% or Mean (SD)
Any AOD treatment, %	216	69.7	84	27.1	77	24.8
Sober living facility 3 months or more, %		N/A	59	19.0	55	17.7
12-step participation, %	282	91.0	295	95.1	236	76.1
Outpatient MH treatment 12 weeks or more, %	283	91.3	206	66.5	172	55.5
Any inpatient MH treatment, %	251	81.0	78	25.2	94	30.3
AOD use (either self-reported or positive UA test), %	310	100.0	183	59.0	192	61.9
Any arrests, %	287	92.6	61	19.7	68	21.9
BSI Global Severity Index (mean score [SD])		77.5 (41.5)		57.9 (39.9)		56.62 (40.7)

AOD: alcohol and other drug; MH: mental health; BSI: Brief Symptom Inventory; N/A: not assessed

¹These variables were assessed for lifetime, with the exception of the BSI, which is assessed with reference to prior 7 days.