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Dual Diagnosis, Mutual-Help Use, and Outcomes: A Naturalistic Follow-Up

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Abstract

Objective: Individuals with dual diagnoses benefit from participation in mutual-help groups, though it is unclear how much such participation contributes to outcomes when accounting for utilization of treatment. **Methods**: We used mixed-model regressions to examine associations between participation in mutual-help groups reported at 6-month, 1-year, and 2-year follow-ups with substance use and psychiatric outcomes among outpatients with dual diagnoses (N=304), while controlling for amounts of substance use disorder and mental health outpatient treatment. **Results**: Follow-up rates were 81%, 82%, and 84% at 6 months, 1 year, and 2 years, respectively. Mean involvement in mutual-help groups (scale of 0-14) ranged between 4.6 ($SD =$ 4.5) and 6.1 ($SD =$ 4.5). When controlling for baseline status and treatment amounts, more mutual-help group meeting attendance, $F(1, 692.99) = 13.98$, $p < 0.001$, and involvement, $F(1, 602.72) = 19.32$, $p < 0.001$, were associated with fewer days of alcohol use. Likewise, after controlling for baseline status and treatment amounts, more mutual-help group meeting attendance, $F(1, 652.82) = 4.57$, $p = 0.03$, and involvement, $F(1, 504.35) = 5.94$, $p = 0.02$, were associated with less drug use. Mutual-help group participation was not associated with number of psychiatric symptoms. Mental health treatment was associated with fewer days of alcohol use, $F(1, 650.17) = 4.58$, $p = 0.03$. **Conclusions**: Facilitating mutual-help group involvement among individuals with dual diagnoses, as well as attendance at more meetings, is of potential benefit to reducing alcohol and drug use.

Keywords *dual diagnosis, mutual-help groups, treatment, substance use and psychiatric outcomes*

Research shows that mutual-help groups are beneficial to individuals with dual diagnoses (Bogenschutz, Geppert, & George, 2006; Magura et al., 2003; Moos, Schaefer, Andrassy, & Moos, 2001). For example, attending more mutual-help group meetings is associated with higher rates of abstinence and remission from drugs and alcohol (Gossup, Stewart, & Marsen, 2008; Weiss et al., 2005). These studies, however, have not considered the impact of mutual-help groups on psychiatric outcomes, controlled for amounts of treatment utilization, or considered other indicators of mutual-help group participation beyond number of meetings. We address these issues by examining whether mutual-help group participation is associated with better substance use and psychiatric outcomes among individuals with dual diagnoses when amounts of substance use disorder and mental health treatment are also considered.

Studies that have controlled for treatment utilization have primarily sampled individuals with substance use disorders only. Attending more mutual-help group meetings was associated with better substance use outcomes when treatment amount was controlled, whereas amount of outpatient care was not independently associated with outcomes (Moos et al., 2001; Ouimette, Moos, & Finney, 1998). These and other studies (Ritsher, McKellar, Finney, Otilingam, & Moos, 2002) suggest that, among individuals with substance use disorders only, attending more mutual-help group meetings is beneficial for substance use outcomes, above and beyond the influence of treatment utilization.

There is limited literature on the potential effects of mutual-help groups when controlling for treatment utilization among individuals with dual diagnoses. Treatment may better address individuals' dual substance use and psychiatric conditions, whereas mutual-help groups may not address psychiatric conditions (Jordan, Davidson, Herman, & Bootsmiller, 2002; Satel, Becker, & Dan, 1993). An exception is dual-focused mutual-help groups, which have limited availability

(Timko, Sutkowi, Cronkite, Makin-Byrd, & Moos, 2011). The focus on substance use disorders in most mutual-help groups may help substance use outcomes more so than psychiatric outcomes. Among patients with dual diagnoses, with treatment utilization controlled, mutual-help group attendance has been associated with a greater likelihood of abstinence (Laudet et al., 2004). Psychiatric symptoms were not assessed, though, leaving open the question of whether mutual-help group participation contributes to improved psychiatric outcomes when accounting for treatment among individuals with dual diagnoses.

Determining which outcomes are associated with mutual-help group participation is important for providers working with patients with dual diagnoses. If mutual-help group participation does not boost psychiatric outcomes, additional referral options for mental health conditions may be needed. Also, examining indicators of mutual-help group participation beyond meeting attendance is important for understanding whether providers need to facilitate involvement in mutual-help groups (sponsorship, service) for individuals with dual diagnoses.

Present Study

In a sample of individuals with dual diagnoses, we examined associations among treatment amounts, mutual-help group participation, and substance use and psychiatric outcomes using data collected at treatment intake and follow-ups. Specifically, we examined whether mutual-help group participation (number of meetings attended, overall involvement in 12-step practices) over three follow-up points (6 months, 1 year, and 2 years post-intake) was associated with better substance use (fewer days of alcohol and drug use) and psychiatric (fewer symptoms) outcomes. These associations were examined after considering patients' baseline status and amounts of substance use disorder, and mental health treatment obtained during the study period.

METHODS

Participants

The sample included 304 patients with dual diagnoses (of 343 approached) entering

outpatient mental health treatment in the Department of Veterans Affairs (VA) in northern

California. Treatment was multidisciplinary, reflected evidence-based practices, and taught

skills such as symptom and stress management. Follow-up rates at 6 months, 1 year, and 2 years

were 81% (*n*=238), 82% (*n*=241), and 84% (*n*=238), respectively, among patients not known to

be incarcerated or to have died. Compared to participants not followed, the only significant

differences were that those followed at 6 months had more education at baseline (13.6 vs. 12.9

years), and those followed at 2 years were older (51.7 vs. 49.0 years old) and more often married

(13.2% vs. 4.4%) at baseline (all *p's*<.05).

Demographic and clinical characteristics. At baseline, the sample was 91.4% male,

51.0% Caucasian, 45.2% employed, and 11.3% married. On average, participants were 51.1

years old (*SD*=8.9) and had 13.5 years of education (*SD*=1.9). According to the medical record

at baseline, psychiatric diagnoses were: major depression (50.5%), bipolar disorder (11.1%),

PTSD (35.9%), other anxiety disorder (24.7%), schizophrenia or schizoaffective disorder

(10.1%), and other psychiatric disorder (16.2%); the total is higher than 100% because some

patients had more than one disorder. These patients had alcohol use disorders only (11.1%), drug

use disorders only (23.4%), or both alcohol and drug use disorders (65.5%). The main drugs of

choice were cocaine, cannabis, and amphetamines.

Prior to enrollment, there was a complete discussion with potential participants and

informed consent was obtained. The study was conducted in accordance with the Declaration of

Helsinki, and the Stanford University Institutional Review Board approved and monitored the study.

Measures

Baseline. At baseline, self-reports regarding patients' demographics and substance use and psychiatric status were obtained by trained research assistants. Items assessing substance use and psychiatric status, using the time period of the previous 30 days, were taken from the Addiction Severity Index (ASI; McLellan, Luborsky, Woody, & O'Brien, 1980; McLellan, Luborsky et al., 1985; McLellan, Kushner et al., 1985). Participants reported the number of days in the past 30 they used alcohol (*M*=9.2, *SD*=8.3) and drugs (*M*=13.7, *SD*=13.6), and the number of psychiatric symptoms, each measured dichotomously, they had experienced in the past month (Angarita et al., 2007; Timko, Cronkite, McKellar, Zemore, & Moos, 2013). Psychiatric symptoms included depression, anxiety/tension, hallucinations, violent behavior, thoughts of suicide, and concentration difficulties (*M*=2.2 symptoms, *SD*=1.4).

Follow-up. Follow-up assessments, conducted by trained research assistants over the phone at 6 months, 1 year, and 2 years after treatment intake, covered patients' mutual-help group participation since the last assessment, and substance use and psychiatric status in the past 30 days. Treatment utilization was assessed with self-reports and medical records.

Treatment utilization. At each follow-up, the number of VA substance use disorder and mental health outpatient sessions the patient attended since the previous assessment was obtained from the medical record; the numbers of non-VA sessions were obtained from self-report. To determine whether treatment sessions were substance use disorder- or mental health-focused, VA stop codes were used; stop codes are outpatient workload identifiers that indicate the main

clinical group responsible for care. Use of stop codes separates substance use disorder and mental health sessions, although providers and patients may discuss problems not contained within the stop code designation. At 6 months, 1 year, and 2 years, respectively, means for substance use disorder treatment sessions were 10.0 (SD=11.6), 6.6 (SD=12.4), and 12.0 (SD=25.6), and means for mental health treatment were 18.1 (SD=20.3), 14.1 (SD=19.1), and 22.6 (SD=30.2), respectively.

Mutual-help group participation. At follow-ups, to assess mutual-help group participation since the previous assessment, we used the Alcoholics Anonymous Inventory (Tonigan, Conners, & Miller, 1996, 2002) and Alcoholics Anonymous Affiliation Scale (Humphreys, Kaskutas, & Weisner, 1998) (replacing "AA" with "12-step mutual-help group"). Together, these measures assess both attendance and level of involvement. The 6-month and 1-year interviews asked about mutual-help group participation over the past 6 months, and the 2-year interview asked about the past year.

Attendance at mutual-help groups was highest at 6-month follow-up, with 76% having attended at least one meeting, while 68% had attended at least one meeting at 1-year follow-up and 67% at 2-year follow-up. Participants reported attending an average of 49.3 mutual-help group meetings between baseline and the 6-month follow-up (SD=72.7), 41.6 meetings between the 6-month and 1-year follow-up (SD=66.7) and 60.9 meetings between the 1-year and 2-year follow-up (SD=91.9). They also reported their overall involvement in mutual-help groups, which was the sum of 14 involvement items (0=no, 1=yes; e.g., did service at meetings, had a sponsor), at 6 months (M=6.1, SD=4.5; Cronbach's α=.92), 1 year (M=4.6, SD=4.5; α=.92), and 2 years (M=5.7, SD=4.8; α=.94).

Substance use and psychiatric status. At each follow-up, participants completed the same measures as at baseline. During the past 30 days, number of days of alcohol and drug use, and number of psychiatric symptoms were assessed using the ASI.

Analysis Plan

We first examined correlations between patients' baseline demographic and clinical characteristics and subsequent mutual-help group participation (meeting attendance and involvement), to determine whether any of these variables should be controlled for in subsequent analyses (Kelly, Stout, Zywiak, & Schneider, 2006; Timko, Billow, & DeBenedetti, 2006). We then examined intercorrelations of treatment amounts, mutual-help group participation, and outcomes. Mixed model regressions were used to examine substance use (alcohol and drug days) and psychiatric outcomes as a function of the baseline value of the outcome, treatment amounts and mutual-help group participation, with a random intercept term for each participant. For all regressions, independent variables included the baseline value of the outcome, number of outpatient sessions of substance use disorder and mental health treatment, and the two indicators of mutual-help group participation (number of meetings attended, overall involvement). All analyses were conducted using PASW Statistics (version 18.0).

RESULTS

Correlations of Baseline Characteristics with Mutual-Help Group Participation

Baseline demographic (gender, race and ethnicity, age, employment status, marital status, education) and clinical (presence of specific psychiatric and substance use disorder diagnoses in the medical record, and total number of diagnoses) characteristics were not associated with

mutual-help group participation, with two exceptions: employed patients attended fewer mutual-help group meetings between the 6-month and 1-year follow-ups ($r = -0.17$, $p = 0.01$) , and participants from racial and ethnic minority groups attended fewer meetings between the 1- and 2-year follow-ups ($r = -0.15$, $p = 0.03$). Due to the lack of consistent associations of patients' demographic and clinical characteristics with mutual-help group participation, we did not control for these characteristics in subsequent analyses.

Intercorrelations of Predictors and Outcomes

At all follow-ups, more mutual-help group meeting attendance and involvement were significantly associated with fewer days of alcohol use. At 6-month and 2-year follow-ups, more mutual-help group meeting attendance was also associated with fewer days of drug use; and at 6-month and 1-year follow-ups, more mutual-help group involvement was associated with fewer days of drug use. There were no significant correlations between mutual-help group meeting attendance or involvement and psychiatric symptoms (Table 1). In general, outpatient substance use disorder treatment, but not mental health treatment, was associated with more mutual-help group participation.

Mixed Model Regressions Predicting Substance Use and Psychiatric Outcomes

With the baseline value of number of days of alcohol use and the amount of substance use disorder treatment controlled, there was a significant effect of mental health treatment on alcohol use, such that more treatment was associated with fewer days of use, $F(1, 650.17) = 4.58$, $p = 0.03$. In addition, more mutual-help group attendance, $F(1, 692.99) = 13.98$, $p < 0.001$, and involvement, $F(1, 602.72) = 19.32$, $p < 0.001$, were associated with less alcohol use. Similarly,

with baseline drug use and treatment amounts considered, more mutual-help group attendance, $F(1, 652.82) = 4.57$, $p = 0.03$, and involvement, $F(1, 504.35) = 5.94$, $p = 0.02$, were associated with fewer days of drug use. Amount of substance use disorder treatment was not associated with outcomes. In addition, neither treatment amounts nor mutual-help group participation were associated with psychiatric outcomes (Table 2).

DISCUSSION

We found that more mutual-help group participation by outpatients with dual diagnoses was associated with better substance use outcomes over two years, above and beyond amounts of treatment received. In contrast, mutual-help group participation was not associated with psychiatric outcomes. Of particular interest was that more overall involvement in mutual-help groups was associated with fewer alcohol- and drug-using days, suggesting that facilitating involvement in mutual-help groups, in addition to simply attending more meetings, may be beneficial to the recovery of patients with dual diagnoses.

Among patients with only substance use disorders, mutual-help group participation contributes to substance use outcomes independent of treatment (Moos et al., 2001; Ouimette et al., 1998). Our results extend these findings to a sample of individuals with dual diagnoses. Significant associations were not found between mutual-help group participation and psychiatric symptoms. For individuals with dual diagnoses, participation in dual-focused mutual-help groups, such as Double Trouble in Recovery, may be helpful to reduce psychiatric symptoms (Magura, 2008).

Number of mutual-help group meetings and overall mutual-help group involvement both were associated with improved outcomes. For individuals with dual diagnoses, encouraging

more meeting attendance may be helpful. In addition, involvement in 12-step practices, such as

connecting with other members including a sponsor, may be important above and beyond

meeting attendance (Kaskutas, Subbaraman, Witbrodt, & Zemore, 2009; Timko & DeBenedetti,

2007).

We found that amounts of substance use disorder and mental health outpatient treatment

had little association with outcomes. The content of sessions, which we did not assess, may have

more of an influence on substance use and psychiatric outcomes than amount of treatment (Hulse

& Tait, 2002). In addition, participants in the current study received parallel substance use

disorder and mental health treatment, and received more mental health than substance use

disorder treatment, which is common in the VA system (Hoff & Rosenheck, 1998; Kerfoot,

Petrakis, & Rosenheck, 2011). Better outcomes may be seen with integrated treatment

(Granholm, Anthenelli, Monteiro, Sevik, & Stoler, 2003).

Limitations

Patients in this study were treated within the VA, which is federally funded and operates

the largest mental health treatment system in the US. Generally, VA substance use disorder and

mental health disorder services are of similar quality and effectiveness to those in the private

sector (Asch, Lofgren, VanRuiswyk, & Layde, 2000; Rosenheck, Desai, Steinwachs, & Lehman,

2000). However, the VA patient population has poorer health status than the general patient

population (Agha et al., 2000; Grella, Stein, Weisner, Chi, & Moos, 2010).

Although we considered potential confounders of associations between mutual-help

group participation and substance use outcomes (baseline characteristics, problem severity, and

treatment amounts), there may be other variables not assessed in the current study that influence

associations between mutual-help group participation and outcomes (Kelly et al., 2006, Timko et al., 2006). Except for the treatment amount data, all of our measures were self-report. Some studies support the validity of self-reports of alcohol and drug use (Babor, Stephan, & Marlatt, 1987; Calhoun et al., 2000; Darke, 1998; Hersh, Mulgrew, Van Kirk, & Kranzler, 1999; Ouimette, Ahrens, Moos, & Finney, 1997), but others do not (Lundy et al., 1997; Magura, 2010; Magura & Kang, 1996). Additional sources of information regarding substance use would be useful for future studies. A more detailed measure of psychiatric symptoms would also be of use in future research. Although the validity of our measure of psychiatric symptoms has some support (Angarita et al., 2007; Timko et al., 2013), it is certainly limited in scope. Finally, future studies should also consider documenting treatment session content.

Conclusions

We found that the benefits of mutual-help group participation for patients with dual diagnoses were obtained for substance use outcomes even when treatment amounts were considered. Because mutual-help group meeting attendance and involvement in 12-step practices may be important components of the treatment plan for individuals with dual diagnoses, providers should consider facilitating participation in mutual-help groups during treatment (Kaskutas et al., 2009; Timko & DeBenedetti, 2007).

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Table 1

Intercorrelations Among Treatment, Mutual-Help Group Participation, and Outcomes

	1	2	3	4	5	6	7
6-month follow-up							
1. Outpatient MH Treatment	--	0.140*	-0.028	-0.094	-0.058	-0.016	0.077
2. Outpatient SUD Treatment		--	0.218**	0.235***	-0.089	-0.092	-0.028
3. MHG Meetings			--	0.552***	-0.135*	-0.142*	-0.028
4. MHG Involvement				--	-0.165*	-0.190**	-0.110
5. Alcohol Days					--	0.148*	0.128
6. Drug Days						--	0.125
7. Psychiatric Symptoms							--
1-year follow-up							
1. Outpatient MH Treatment	--	0.124	-0.089	-0.155*	-0.040	0.092	0.050
2. Outpatient SUD Treatment		--	0.124	0.175**	-0.114	-0.092	-0.063
3. MHG Meetings			--	0.616***	-0.171**	-0.086	-0.128
4. MHG Involvement				--	-0.272***	-0.134*	-0.130
5. Alcohol Days					--	0.152*	0.093
6. Drug Days						--	0.117
7. Psychiatric Symptoms							--
2-year follow-up							
1. Outpatient MH Treatment	--	0.177**	-0.039	-0.034	-0.222**	-0.144*	0.128
2. Outpatient SUD Treatment		--	0.256***	0.303***	-0.107	-0.099	0.007
3. MHG Meetings			--	0.665***	-0.148*	-0.133*	-0.087
4. MHG Involvement				--	-0.140*	-0.099	-0.101
5. Alcohol Days					--	0.275***	0.159*
6. Drug Days						--	0.341***
7. Psychiatric Symptoms							--

Note. SUD = substance use disorder, MH = mental health, MHG = mutual-help group

*p < 0.05, ** p < 0.01, *** p < 0.001

Table 2

Estimated Effects of Treatment and Mutual-Help Group Participation on Outcomes

Parameter	Alcohol Days			Drug Days			Psychiatric Symptoms		
	Est.	*SE*	95% CI	Est.	*SE*	95% CI	Est.	*SE*	95% CI
Intercept	2.770***	0.400	1.984 – 3.556	2.495***	0.442	1.627 – 3.364	1.162***	0.131	0.904 – 1.420
Baseline Value of Outcome	0.228***	0.052	0.124 – 0.331	0.176***	0.037	0.103 – 0.249	0.410***	0.047	0.317 – 0.503
SUD Treatment	-0.005	0.011	-0.028 – 0.018	-0.016	0.014	-0.044 – 0.012	-0.004	0.003	-0.010 – 0.001
MH Treatment	-0.020*	0.009	-0.039 – -0.001	-0.017	0.011	-0.039 – 0.006	0.002	0.002	-0.002 – 0.007
MHG Meetings	-0.011***	0.003	-0.017 – -0.005	-0008*	0.004	-0.015 – -0.001	-0.001	0.001	-0.002 – 0.001
MHG Involvement	-0.243***	0.055	-0.353 – -0.135	-0.157*	0.064	-0.283 – -0.030	-0.014	0.013	-0.039 – 0.011
Intercept Variance	14.346***	2.167	10.669 – 19.289	11.175***	2.696	6.964 – 17.932	0.704***	0.107	0.522 – 0.948

Note. For all models, $df = 6$; SUD = Substance Use Disorder, MH = mental health, MHG = mutual-help group, Est = estimate, *SE* =

standard error, CI = confidence interval.

*p < 0.05, ** p < 0.01, *** p < 0.001