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Community behavioral health service use and criminal recidivism among people with mental and/or substance use disorders

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Abstract

Objective: This study assessed the relationship between community behavioral health services (CBHS) and criminal recidivism in a broad sample of potential beneficiaries and between diagnostic groups.

Methods: Among a cohort of people on probation with any mental and/or substance use disorder ($n = 772$), the study estimated the effect of CBHS service use on rearrest with Cox Proportional Hazards models.

Results: Service use significantly predicted reduced recidivism for people with mental disorders ($HR = 0.356, p = .008$), but not those with substance use or co-occurring disorders.

Conclusions: CBHS use in a given week predicts an estimated 64% reduced recidivism risk the following week for people with mental disorders. However, CBHS use has no clear relationship with recidivism among people with co-occurring or substance use disorders. CBHS may reduce recidivism, depending on recipient and service characteristics.

Keywords

Recidivism; mental health services; substance abuse services; behavioral health; treatment

People with mental and/or substance use disorders are overrepresented in criminal legal systems (1). Advocates argue that community-based mental and substance abuse services (community behavioral health services, CBHS) can reduce incarceration (2), but empirical tests of the effect of CBHS on criminal recidivism have yielded largely null but mixed results (3–6). These results, however, may not be generalizable across people with behavioral health problems nor to specific diagnostic groups.

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Disclosures

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Two factors constrain the generalizability of research on CBHS and recidivism. First, research has almost exclusively focused on service use among people with “serious” mental disorders. Second, research has siloed diagnostic groups and services, looking only at the effect of mental health services for people with serious mental disorders (3) or, infrequently, the effect of substance abuse services for people with substance use problems (7). This focus on serious mental disorders and siloing of diagnostic groups and services, raises questions as to the effect of services among a broader group of potential beneficiaries (i.e., people with any mental disorder), as well as for people with co-occurring mental and substance use disorders. Further, without considering both mental and substance abuse focused services and without distinguishing effects between diagnostic groups, treatment effects and differential outcomes may be masked. Though treated as distinct by researchers, system-involved people with mental and substance use disorders overlap considerably (8), likely use an array of mental and/or substance abuse services, and may differently benefit from services.

This study assesses the effect of *any* CBHS utilization on recidivism among people with *any* mental and/or substance use disorder, and whether effects vary between diagnostic groups. We draw on a longitudinal dataset that integrates court, probation, and CBHS data on people on probation with a disorder ($n = 772$). With implications for future research and policy, the study estimates the potential benefit CBHS could realize for recidivism reduction among people with mental, substance use, and co-occurring disorders.

METHOD

The dataframe for this study was all people starting probation between October 2011 and June 2014 in San Francisco, California. We identified people who had any mental and/or substance use disorder diagnosis prior to starting probation ($n = 942$); 772 (82%) had complete data and comprise our final sample. People with complete and incomplete data did not substantially differ in terms of observed data.

The study’s outcome is time to recidivism based on arrests documented in court records. We measured time as weeks under probation supervision, beginning with probation start and ending with a recidivism or censor date (July 1, 2014). The median observation period was 28 weeks; 51% ($n = 396$) were rearrested.

Our treatment variable was use of any service in a given week t . Services included those focused on mental health or substance abuse and delivered in outpatient, day treatment, and residential contexts. The moderator of interest, diagnosis type, was one of three categories: any mental disorder only, any substance use disorder only, and co-occurring mental and substance use disorders. Diagnoses were made by licensed clinicians, in accordance with the *Diagnostic and Statistical Manual of Mental Disorders* (9). We drew service and diagnostic data from an electronic health record (EHR) system used by providers who receive public funds. Diagnosis type and service type were concordant; of service users, 87% ($n = 107$) of people with mental disorders only received only mental health services, and 84% ($n = 68$) of people with substance use disorders only received only substance abuse services. For people with co-occurring disorders, use was distributed across mental- (49%, $n = 49$), substance

abuse- (29%, $n = 29$), and both mental and substance abuse-focused services (23%, $n = 29$). Though some contacts may be omitted, the rate of service receipt is comparable to or higher than rates in other samples (10)–40% ($n = 305$) used one or more services.

We considered 37 covariates that, based on prior research, could confound the service use–recidivism relationship. These included demographics, behavioral health-related variables, prior service-use variables, and socio-economic and criminal justice variables. We drew covariate data from probation records, the EHR, and a criminal risk assessment (Correctional Offender Management Profiling for Alternative Sanctions; 11, 12). From these variables, we used stepwise selection to identify 15 covariates for adjustment (see Table 1). All 15 covariates, except houselessness, were measured at baseline. Houselessness was time-varying. We considered statistical models that adjusted for all 37 covariates, and found that results were quite similar to those presented here. We focus on results using the 15 covariates to increase precision and statistical power.

To assess the relationship between services and recidivism, we used a time-dependent Cox proportional hazards (PH) model, where each subject-week is an observation. The model specified the hazard rate (HR) of recidivating at a given week t as a function of baseline covariates, houselessness in the previous week $t-1$, and service use in the prior four weeks ($t-1$ through $t-4$). To test whether diagnosis type moderates the relationship between services and recidivism, we interacted service use in week $t-1$ with diagnosis type, with mental disorder as the reference group. Assuming no unmeasured confounding or misspecification, this measures the effect of service use in week $t-1$ on recidivism risk in week t for those with mental disorders, conditional on covariates (13, 14), and the differential effects for those with substance or co-occurring disorders, compared to those with mental disorders. By including service use in weeks $t-2$ through $t-4$, we target the effect of recent service use, rather than all past use (14); this implicitly adjusts for potentially-confounding latent characteristics that lead people to use services prior to week $t-1$. We fit our model using the survival R package (15). Procedures were approved by Institutional Review Boards at the University of California, Berkeley and University of Pittsburgh.

RESULTS

We first assessed the overall effect of service use across people with any mental and/or substance use disorders. Service use was associated with lower recidivism risk in the following week (conditional on baseline covariates, houselessness, and prior service use), but this effect was small and not statistically significant (HR = 0.708, $p = .149$, 95% confidence interval [CI; 0.443, 1.131]).

Next, interacting service use with diagnosis type and adjusting for covariates, we found service use was associated with reduced recidivism risk in the following week for those with mental disorders (HR = 0.356, $p = .008$, 95% CI [0.166, 0.765]). We found moderate evidence that this beneficial effect is lower for those with co-occurring disorders than those with mental disorders only (HR = 2.190, $p = .065$, 95% CI [0.952, 5.038]). This interactive effect represents the effect of service use for those with co-occurring disorders *relative* to those with mental disorders. The corresponding HR for those with co-occurring

disorders was less than one, but was not statistically significant. For those with substance use disorders, the effect of service use is worse than those with mental disorders (HR = 3.428, $p = .004$, 95% CI [1.498, 7.854]). The HR for those with substance use disorders was greater than one, but was not statistically significant. Service use is significantly protective for those with mental disorders, trends protective but statistically non-significant for those with co-occurring disorders, and trends risk enhancing but statistically non-significant for those with substance use disorders.

DISCUSSION

This study adds to research on CBHS use and recidivism by sampling a broad group of potential beneficiaries, considering mental and substance abuse services, and assessing variability in effects across diagnostic groups. Prior to accounting for variation across groups, CBHS use was not significantly associated with recidivism. However, when groups were considered, service use was associated with significant reductions in recidivism for the group with mental disorders only. The effect of service use on people with co-occurring disorders was also negative (i.e., risk reducing) but non-significant, while the effect of service use on people with substance use disorders only was positive (i.e., risk enhancing) but non-significant.

Prior research indicates that, among people with serious mental disorders, mental health focused services are not associated with reductions in recidivism (16). We found that among people with *any* mental disorder (including non-serious, excluding co-occurring substance use), service use was associated with reductions in recidivism. This suggests that prior conclusions regarding the irrelevance of CBHS for recidivism reduction may not be generalizable to service users with any mental disorder and may inappropriately reduce confidence in the utility of investing in CBHS to reduce incarceration.

As for people with substance use disorders only, though not statistically significant, we found that service use predicted an increased risk of recidivism. Prior research indicates that services can backfire, increasing recidivism (5). This may be especially true for substance abuse services, where enhanced social control and surveillance can accompany services that often target a criminal activity (i.e., illicit drug use). Here, the combination of risk-enhancing substance use services and risk-reducing mental health services diluted the overall effect of CBHS on recidivism across the larger sample, making it non-significant. Similarly, this may explain the small and non-significant effect of service use on recidivism for people with co-occurring disorders (who used a mix of mental and substance abuse services) here and in prior research.

These results should be interpreted in light of several limitations. First, the study is observational. Although we can assess the relationship between service use and recidivism, we cannot completely mitigate the possibility that unobserved covariates explain this relationship (e.g., we could not directly account for symptoms). However, with a time-dependent PH model, we account for an array of variables, many of which are potential confounders and likely correlate with symptoms. Second, reliance on administrative data may lead to the omission of some services and people with diagnoses. This may especially

be true for substance use disorders, for which people are less likely to receive services and diagnoses (10). Given the economic circumstances of people in the sample and the robustness of CBHS in San Francisco, we likely include the majority of services. Still, future research using diagnostic interviewing is warranted. Relatedly, we were not able to fully capture service characteristics (e.g., quality), nor rule them out as confounds. We examined effects by service type and found no evidence that service type confounded the interactive effect of service use and diagnostic group on recidivism, but we cannot rule out the possibility that differences in effects reflect differences in services among diagnostic groups more than differences in treatment responsiveness among those groups. Finally, sample and service system characteristics vary across locales. Thus, findings are most generalizable to similar probation populations and contexts.

Conclusions

The relationship between CBHS utilization and criminal recidivism differs between diagnostic groups. CBHS use was associated with reduced recidivism among people with any mental disorder, but not those with substance use or co-occurring disorders. To fully capture the effect of CBHS on recidivism, future studies should attend to differences between diagnostic groups and consider effects on those with non-serious and serious diagnoses. Further, future research should test potential drivers of differential effects across diagnostic groups. As for policy, findings support calls to expand mental health services to reduce incarceration among people with any mental disorder. Findings also indicate the need to identify substance abuse services that demonstrate reductions in recidivism, prior to their expansion. Ultimately, CBHS has the potential to reduce recidivism, but that potential depends on service targets and qualities.

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Highlights.

- Community behavioral health services (CBHS) was not associated with significant reductions in criminal recidivism among people on probation, prior to taking potential variation in effects into account.
- Testing for effect variation, results indicated that the effect of CBHS use differed across persons with mental disorders only, substance use disorders only, and co-occurring mental and substance use disorders.
- CBHS use was significantly associated with reduced recidivism among persons with mental disorders only, but not those with substance use or co-occurring mental and substance use disorders.
- For persons on probation with mental disorders only, using CBHS in any given week yielded an estimated 64% reduced recidivism risk the following week.

Table 1

Recidivism, service use, and other sample characteristics, by diagnostic groups

	Mental Disorder		Substance Use Disorder		Co-occurring Disorder	
	n = 329		n = 243		n = 200	
Characteristics	n	%	n	%	n	%
Rearrested	156	47	142	58	98	49
Attended any service	123	37	81	33	101	51
Attended residential services	24	7	8	3	15	8
Attended medication-related services	77	23	51	21	60	30
Attended day treatment services	12	4	2	1	9	5
Attended outpatient therapeutic services	110	33	80	33	79	40
Attended ancillary services	75	23	3	1	48	24
Age (M±SD)	36.0± 13.1		39.3± 11.2		37.3± 11.8	
Male	265	81	205	84	160	80
Race						
White	97	30	63	26	77	39
Black	179	54	130	54	85	43
Latinx	20	6	28	12	25	13
Asian/Pacific Islander	23	7	17	7	11	6
Another	10	3	5	2	2	1
Recidivism risk score (M±SD)	-0.0±0.8		0.4±0.6		0.4±0.7	
Supervision level						
Low	92	28	23	10	27	14
Medium	32	10	17	7	22	11
Medium high	56	17	51	21	43	22
High	149	45	152	63	108	54
Houseless (at any point during the observation period)	116	35	105	43	114	57
Employed	49	15	35	14	14	7
High school graduate/GED	225	68	160	66	135	68
Drug trafficking index offense	25	8	60	25	25	13
Drug possession arrests (M±SD)	1.2±1.3		2.3±1.3		1.8±1.1	
Using alcohol at time of index offense	76	23	83	34	78	39
Perceived need for alcohol treatment	79	24	84	35	87	44
Drug use in youth	66	20	102	42	81	41
Opioid use disorder	0	0	47	19	30	15
Prior psychiatric hospitalization	39	12	0	0	36	18

Note. Cells display counts and percentages, unless otherwise noted. Recidivism, service attendance variables, and houselessness were measured prospectively. Prior psychiatric hospitalization was measured retrospectively. All other variables were measured at baseline.