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Short communication

Polysubstance use by psychiatry inpatients with co-occurring mental health and substance use disorders

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ABSTRACT

Background: Polysubstance use, the consumption of more than one substance over a defined period, is common and associated with psychiatric problems and poor treatment adherence and outcomes. This study examined past-month polysubstance use at intake among psychiatry inpatients with co-occurring mental health and substance use disorders, and outcomes 3 months later.

Methods: Participants (n = 406 psychiatry inpatients with documented mental health and substance use disorders) completed a baseline and a 3-month follow-up (84%) interview. With baseline data, a latent class analysis was conducted on substances used in the past 30 days. Analyses of covariance tested for differences among classes on outcomes at 3-month follow-up.

Results: At baseline, three classes were estimated: Cannabis + Alcohol (35.1%), Alcohol (49.3%), and Polysubstance, notably, cocaine plus alcohol and marijuana (15.7%). At follow-up, the Polysubstance class had more severe alcohol and drug use, support for abstinence, and motivation for help-seeking, but less abstinence self-efficacy; it was most likely to attend 12-step groups. The Cannabis + Alcohol class was least likely to obtain outpatient substance use treatment, and had the lowest percent days abstinent.

Conclusions: Psychiatry inpatients with co-occurring substance use and mental health disorders have varying substance use patterns that correspond to substance-related outcomes concurrently and over time. Many patients achieved abstinence for most days of the 3-month post-hospitalization period. To further increase abstinence, providers could build on polysubstance-using patients' high motivation to increase self-efficacy. In addition, because patients using mainly cannabis plus alcohol may perceive little harm from cannabis use, providers may consider modifying risk perceptions through effective education.

1. Introduction

Polysubstance use, consuming more than one substance over a defined period, is common and associated with psychiatric, medical, and cognitive problems, health risk behaviors, and poor treatment adherence and outcomes (Connor et al., 2014). Operationalizations of polysubstance use have been based on 1- to 12-month or lifetime prevalence, or simultaneous substance use (Connor et al., 2014). Demographic predictors of polysubstance use are being male, young adult, African-American, not married or partnered, uneducated, urban dwelling, and employed (Connor et al., 2014; Kedia et al., 2007).

Recently, latent class analysis (LCA) has been used to characterize polysubstance use (Connor et al., 2014). To determine past-year illegal drug use patterns in a national sample of alcohol-dependent persons (Hedden et al., 2010), LCA found a five-class solution; the largest classes were a near-zero probability of illegal drug use (65%) and high marijuana and medium cocaine use (21%). Another LCA of past-month drug use among cannabis users found a three-class solution: cannabis and tobacco (22%), cannabis, tobacco, and alcohol (62%), and wide-ranging substance use (16%), which involved dysfunctional cannabis cognitions such as less self-efficacy (Connor et al., 2013). Among past-year amphetamine users in treatment, LCA identified three classes: opiates-polydrug (15%), alcohol-polydrug (26%), and low-polydrug (59%), which reported better quality of life and safer practices (Kelly et al., 2017). Together, studies employing LCA suggest that polysubstance use is associated with poor functioning.

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This study examined past-month polysubstance use in a different population: psychiatry inpatients with co-occurring mental health and substance use disorders. Psychiatry inpatients have more severe mental illness and safety risks than dually diagnosed patients in other treatment settings (Manning et al., 2008). Dually diagnosed psychiatry patients may not be aware or convinced of having a substance use disorder. They often view psychiatric problems as primary, deny substance use problems, and perceive addiction treatment as minimizing psychiatric symptoms and restricting new information about mental illness. The combination of mental illness severity and substance use minimization highlights the need to better understand consequences of substance use patterns among inpatients.

In addition to using LCA to identify polysubstance use at treatment intake, we examined outcomes of identified classes at 3-month follow-up. Findings may inform treatments for co-occurring disorders by better characterizing polysubstance use patterns and their consequences. Because prospective recovery from polysubstance use remains understudied (Hagen et al., 2017), a better understanding of associations of polysubstance use with subsequent help-seeking and outcomes should shed light on recovery targets and processes for these patients.

2. Material and methods

Participants (406 psychiatry inpatients) were enrolled in a year-long randomized trial of an intervention intended to facilitate treatment post-discharge (enhanced versus usual telephone monitoring); trial results are not yet known. Case managers screened patients in consecutive order for eligibility: Axis I psychiatric and substance use disorders documented in the medical record, sufficient cognitive functioning for study procedures, and telephone access for post-discharge contact. Site Institutional Review Boards approved study and informed consent procedures.

Participants were interviewed at baseline and follow-up (84% of 396 participants still living and not incarcerated). At baseline, psychiatric diagnoses were depression (78.1%), PTSD (41.3%), other anxiety disorder (63.4%), schizophrenia or schizoaffective disorder (29.1%), and bipolar disorder (16.9%). Participants were predominantly male (90.0%), white (63.1%), unmarried (83.8%), housed (92.8%), high school graduates (88.5%), and unemployed (75.6%); mean age was 44.9 (SD = 12.9). Baseline comparisons of patients followed or not followed found only that followed patients were older at baseline than patients not followed; Ms = 45.6 (SD = 12.4) and 41.9 (SD = 14.4) respectively, t = 2.22, p = 0.027.

The Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998) was used to assess psychiatric symptom severity (Table 1). For each disorder, a standardized score summed the number of items (assessing, in the past 30 days: experienced the symptom not at all [=0] to extremely [=4]) and divided the sum by the number of items. Social Support for Abstinence included 10 items from the Social Influences on Abstinence and Drug Use measure (Wasserman et al., 2001) on which patients rated how often they had received each supportive behavior from people they spent time with. Self-efficacy used the 8-item Brief Situational Confidence Questionnaire (Breslin et al., 2000) tapping confidence in resisting alcohol and drugs in different situations. The Treatment Self-Regulation Questionnaire (Levesque et al., 2007) assessed Autonomous Motivation (mean of 6 items reflecting personal interests and values) and Controlled Motivation (mean of 6 items reflecting external or internal pressures) regarding help-seeking for substance use; 1 = strongly disagree, to 5 = strongly agree. The Timeline Follow-Back (Sobell et al., 1996) procedure assessed percent days abstinent from alcohol and drug use during the previous three months. At follow-up, we assessed receipt of outpatient addiction treatment (yes/no), and participation in 12-step mutual-help groups (yes/no for any meeting attendance, number of meetings attended, and involvement, i.e., the count of 14 12-step practices used). Across measures at baseline and follow-up, Cronbach's alpha = 0.83 to 0.93.

We used MPlus to conduct an LCA on substances used in the past 30 days (coded dichotomously) by at least 10% of participants: alcohol, opioids, cocaine, amphetamines, and cannabis. Model fit was assessed using the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). The optimal number of classes was based on minimum values of these indices. Model fitting started with a 2-class, and proceeded up to a 4-class, solution.

Chi-square or Analysis of Variance tested for differences among classes on demographic characteristics and mental health diagnoses at baseline. Analyses of Covariance tested for differences among classes on outcomes at 3-month follow-up, controlling for: demographic characteristics that differed between classes, the condition assignment in the randomized trial, and the baseline value of the outcome. When the F-test was significant, group means were compared using Tukey's HSD post-hoc test.

3. Results

The LCA's model fit statistics for the 2, 3, and 4 class solutions indicated that the 3-class model was optimal; AIC = 2003.02 and BIC = 2071.21. Fig. 1 shows the probability of using the 5 substances over the past 30 days for the 3-class model. Class 1, "Cannabis

Table 1
Comparisons of outcomes at 3-month follow up: ANCOVAs controlling for race, age, condition, and baseline value of outcome.

Severity	Cannabis + Alcohol M (SD)	Alcohol M (SD)	Polysubstance M (SD)	F (p)
Alcohol use	2.28a (3.05)	2.50b (3.18)	3.69ab (3.17)	4.41 (0.013)
Drug use	2.83a (2.96)	2.88b (3.54)	3.91ab (3.27)	3.30 (0.038)
Depression	1.86 (1.04)	1.89 (1.05)	1.83 (.87)	0.06 (0.939)
Suicide	2.39 (4.04)	2.54 (4.49)	1.71 (3.80)	0.77 (0.462)
General anxiety	2.23 (1.55)	2.36 (1.71)	2.15 (1.56)	0.41 (0.662)
Social anxiety	1.99a (2.20)	2.65a (2.25)	2.39 (2.06)	3.73 (0.025)
PTSD	2.73 (2.44)	2.84 (2.54)	2.87 (2.61)	0.92 (0.924)
Abstinence				
Support	22.06a (10.87)	24.50b (10.82)	26.19ab (9.85)	3.40 (0.035)
Self-efficacy	75.34a (26.98)	74.11b (25.68)	64.00ab (29.42)	3.76 (0.024)
% days (past 90)	71.80a (37.41)	87.10a (22.89)	80.90a (28.71)	8.04 (0.000)
Help-seeking				
Autonomous	3.88a (.97)	3.95b (.93)	4.35ab (.47)	3.58 (0.029)
Controlled	3.04a (.90)	3.17b (.93)	3.48ab (.78)	4.70 (0.010)
Outpatient (% yes)	21.50ab (40.99)	36.60a (48.45)	41.30b (49.54)	4.61 (0.011)
12-step meeting (%)	53.50a (50.20)	51.90b (50.10)	72.30ab (43.70)	3.50 (0.031)
Number of meetings	19.51 (32.98)	24.35 (52.48)	31.39 (37.77)	1.21 (0.299)
Involvement	3.94 (3.78)	3.75 (4.08)	5.13 (3.75)	2.82 (0.061)

Note: Means that share a superscript are significantly different ($p < 0.05$).