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Factors Associated with Benzodiazepine Prescribing in Community Mental Health Settings

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Abstract

Objective: One class of drugs increasingly involved in overdose fatalities are benzodiazepines. Prescribing benzodiazepines to individuals with co-occurring substance use disorders (SUDs) poses risk for overdose and dependence and is not recommended. The current study reports prevalence rates of prescribing benzodiazepines to patients with and without co-occurring SUDs in community mental health settings. Clinical and socio-demographic factors associated with receipt of a benzodiazepine were examined, including whether factors potentially indicative of prescribing biases (older age and patient race) moderated the relationship between having a co-occurring SUD and receiving a benzodiazepine prescription.

Methods: Retrospective chart review data from individuals treated between August 2014 and August 2017 were collected as part of an NIMH-funded RCT of Person-Centered Care Planning. Data were assessed from 774 charts collected across 14 sites nested within ten community mental health centers (CMHCs). Mixed effects logistic regression models examined direct and interaction effects related to receipt of a benzodiazepine.

Results: Of the 774 patients, 19.9% (N=154) were prescribed at least one benzodiazepine. Of those prescribed a benzodiazepine, 35.1% (N=54) had a co-occurring SUD and 31.8% (N=49) had an anxiety disorder. Our main effects model did not find a significant difference in the odds of receiving a benzodiazepine among patients with and without a co-occurring SUD (OR= .77, CI: 0.50–1.17). However, moderation analyses found that the odds of being prescribed a benzodiazepine among people with co-occurring SUDs was greater among people of older age (OR: 2.01, CI: 1.01–4.02) and non-Hispanic white race (OR=3.34, CI: 1.55–7.22)

Discussion: Our findings demonstrate that a considerable number of individuals with a documented co-occurring SUD are prescribed benzodiazepines in CMHCs, a practice that poses risks for dependence and overdose. Prescribing decisions may be influenced by patient age and race.

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Keywords

overdose prevention; prescription drug use; co-occurring disorders; integrated treatment; community mental health

1. Introduction

Benzodiazepines (e.g. Xanax, Ativan), a class of drugs with anxiolytic, hypnotic, and muscle-relaxant properties, are highly effective in treating some mental health and medical conditions, including anxiety disorders, insomnia, and alcohol withdrawal (Olson, King & Schoenbaum, 2015). However, as central nervous system depressants, prescribing them to individuals with co-occurring substance use disorders (SUDs) poses increased risk for overdose, misuse, and dependence. From 2002 to 2016, there has been an eight-fold increase in overdose deaths involving benzodiazepines, and these drugs have been involved in almost a third of overdose fatalities involving opioids (CDC WONDER, 2018; Hedegaard & Warner, 2017). Given these risks, the American Society of Addiction Medicine (ASAM) and disorder specific guidelines assert that the use of benzodiazepines to treat individuals with both a mental health and a co-occurring SUD should be avoided (Miller et al, 2019; Stoller, 2016; Gelenberg et al, 2010; Kleber et al, 2007). When their use is unavoidable, a careful risk assessment should be performed and safeguards (e.g. using long-acting agents) implemented (Stoller, 2016; Miller et al, 2019).

Yet despite these recommendations, research suggests benzodiazepines continue to be prescribed at high rates to people with co-occurring SUDs and that factors including patient race and age may be influencing prescribing decisions. Potentially biased benzodiazepine prescribing has been documented when this class of drugs is prescribed to people with SUDs as well as to the general population (Peters et al, 2015; Cook et al, 2018). Older adults in the general population are more likely to receive a benzodiazepine prescription, a phenomenon that cannot be explained by age specific prevalence of anxiety disorders (Olfson, King & Schoenbaum, 2015; Kroll et al, 2016). Non-Hispanic whites are also disproportionately more likely to receive a prescription than non-whites when presenting to services, a finding that, similar to age characteristics, cannot be explained by patterns of mental illness burden or service utilization alone (Peters et al, 2015; Cook et al, 2018). Gender differences also exist with females being more likely to receive a benzodiazepine prescription; however, this may be due to greater prevalence of anxiety disorders in females (Paulozzi, Strickler, Kreiner, & Koris, 2015; Kessler & Wang, 2008). Data examining patterns of prescribing to people with SUDs specifically point to similar findings, with patients more likely to receive a prescription if they are female, Non-Hispanic white and older (O'Brien et al, 2017). These same factors are also associated with increased risk for misuse of a benzodiazepine prescription (Votaw, Geyer, Rieselbach & McHugh, 2019).

More research is needed to examine the overall rates of prescribing to individuals with co-occurring SUDs and to assess whether prescribing biases may be influencing this risky practice. There is an absence of recent research examining this topic within community mental health settings, despite their being at the front lines of treating people with serious

mental illness, many of whom have co-occurring SUDs (Brunette et al, 2003). Thus, the present study examined the use of benzodiazepines across 14 community mental health sites in two states using cross-sectional chart review data. The research questions were: 1) What is the overall rate of prescribing benzodiazepines to individuals with and without co-occurring SUDs across the 14 sites? 2) What are the clinical and demographic factors associated with prescribing benzodiazepines in the overall sample? and 3) Do factors potentially indicative of prescribing biases (older age and race) moderate the relationship between having a co-occurring SUD and receiving a benzodiazepine?

2.1 Material and Methods

2.2 Study Setting

This study is a cross-sectional retrospective chart review of patient charts assessed as part of the parent study, an NIMH-funded randomized controlled trial *Person Centered Care Planning and Service Engagement* (Stanhope, Tondora, Davidson, Choy-Brown & Marcus, 2015). The parent study is a hybrid clinical trial testing the effectiveness and implementation of Person-Centered Care Planning (PCCP). PCCP is an emerging evidence-based practice that applies the principles of person-centered care (e.g. patient choice, collaborative goal setting) into the process of service planning. The core component of PCCP is the collaborative development of a plan for services centered around the life goals of the person in treatment (e.g. obtaining employment, finding a partner). The parent study did not include prescribers and was not expected to impact patients' medication regimens; data on psychiatric medication were collected only for the purpose of the current study.

Data were collected from 14 sites nested within 10 community mental health centers (CMHCs). The 14 sites were located in two Northeastern states and provided a variety of services including outpatient therapy, crisis intervention, medication management, case management, residential programs, community support programs, and rehabilitation services. All aspects of the study protocol were reviewed and approved by the New York University Institutional Review Board.

2.3 Data Collection

Chart review data were pulled from 798 unique patient charts across the 14 sites. The data assessed from these charts included the patients' socio-demographics, clinical diagnoses and the current psychiatric medications they were prescribed. Sixty charts were assessed at each of the 14 sites with the exception of one site that was a group home serving a small number of individuals; only 18 charts were assessed at this site (total N=798). Charts were pulled randomly and assessed at a single point in time during one of the parent study time-points (which ranged between August 2014 and August 2017). All data were de-identified and no identifying patient information was included.

2.4 Measures

All measures including patient diagnosis, medication and socio-demographics were based on clinical assessment and recorded in the charts by providers. Independent variables included patient race, age, and the presence of a co-occurring SUD. Consistent with DSM-V criteria,

charts containing diagnoses of substance dependence and substance abuse were coded as a co-occurring SUD (American Psychiatric Association, 2013). Covariates included patient gender and clinical variables, including primary diagnosis and presence of an anxiety disorder. Primary diagnosis could include one of the following: psychotic disorder, bipolar disorder, depressive disorder, and other disorder. As some secondary and tertiary diagnoses did not conform to DSM-V standards and many patients had four or more diagnoses listed, it was difficult to group diagnoses other than the principal diagnosis into categories. Thus, we conformed to decision-making in similar research to include only the principal diagnosis with anxiety disorder included as a secondary diagnosis (Peters et al, 2015).

The dependent variable was defined as whether or not the patient was prescribed a benzodiazepine (daily or “as needed” p.r.n.) during the single point in time for which the chart was pulled. Receipt of a benzodiazepine prescription included charts in which the patient was prescribed one or more of the following medications: alprazolam, chlordiazepoxide, clonazepam, clorazepate, diazepam, estazolam, flurazepam, halazepam, lorazepam, oxazepam, prazepam, quazepam, temazepam, or triazolam. Receipt of a benzodiazepine was coded as 1. Receipt of medications that did not include a benzodiazepine or not receiving any medication was coded as 0.

2.5 Statistical Analysis

Of the 798 charts assessed, data from 24 charts were not included in the analysis due to missing data so the total sample was 774 patient charts. Descriptive analyses examined frequencies and percentages of each of the independent variables. We used chi-square analyses to examine the relationships between the receipt of a benzodiazepine prescription and the independent and covariate variables. To account for the possibility that benzodiazepine prescribing was partly a function of site characteristics, we conducted mixed effects logistic regression models. To assess the degree of non-independence, we calculated the intraclass correlation coefficient to estimate the proportion of variance in benzodiazepine prescribing accounted for by nesting within the study sites. All analyses controlled for covariates, including primary diagnosis, presence of an anxiety disorder, and gender. Race was dummy-coded for the multivariate analyses as white vs. non-white due to small cell sizes in the bivariate analyses. The analyses were conducted in two stages. First, we tested the main effects of co-occurring SUD, race and age as well as the covariates on receipt of a benzodiazepine prescription. Then in the remaining models, we included the interactions terms; one model included white race by substance-use diagnosis and the other included aged 55 and older by substance-use diagnosis. These two interaction models sought to examine whether the relationship between co-occurring SUD and receipt of a benzodiazepine varied as a function of white race or older age. All analyses were conducted using SPSS Version 25 (IMB, Inc).

3.1 Results

The overall sample comprised charts from 774 unique patients receiving treatment across the 14 sites. Over forty percent of the charts in the total sample were for patients who had a co-occurring SUD (N=311, 40.7%) and approximately a quarter had an anxiety disorder

(N=187, 24.2%). The sample was majority male (N=435, 54.7%), majority white (N=470, 60.7%), and 31.6% (N=241) were aged 55 and older. The most common primary diagnosis was a psychotic disorder (N=315, 40.9%) followed by a depressive disorder (N=164, 21.3%), bipolar disorder (N=143, 18.5%) and “other” disorder (N=149, 19.3%).

Among this overall sample, 19.9% (N=154) were prescribed at least one benzodiazepine during the point in time when their chart was assessed. Of these 154 patients prescribed a benzodiazepine, 35.1% (N=54) had a co-occurring SUD. The majority of those prescribed a benzodiazepine were female (N=95, 61.7%), white (N=113, 73.4%), and aged 55 and older (N=66, 42.9%). Table 1 presents these descriptive statistics and results of the chi-square analyses. The chi-square analyses tested whether receipt of a benzodiazepine differed between the groups of each categorical variable. Receipt of a benzodiazepine differed significantly in terms of age, gender, race (all $p < .01$) and presence of an anxiety disorder ($p < .05$). No other variables differed significantly, including presence of a co-occurring SUD.

Our main effects analysis (see Table 2) found that patients with co-occurring SUD had lower odds of receiving a benzodiazepine compared to those without an SUD (OR= .77, CI: 0.50–1.17); however, this difference was not statistically significant. The odds of receiving a benzodiazepine were significantly greater for Non-Hispanic white patients compared to non-white patients (OR=1.79, CI: 1.15–2.80). The odds of receiving a benzodiazepine were also greater among patients aged 35–44 (OR: 4.71, CI: 1.92–11.62), 45–54 (OR: 6.41; CI: 2.75–14.95) and those aged 55 and older (OR: 6.29; CI: 2.72–14.51) compared to the reference group of patients aged 18–24. Several covariates in the main effects model were also associated with greater odds of receiving a benzodiazepine. The odds of receiving a benzodiazepine were higher among females (OR=1.96, CI: 1.31–2.94) compared to males as well as among patients diagnosed with an anxiety disorder (OR=2.15, CI: 1.35–3.43) compared to those without this diagnosis.

Our main effects model found no association between co-occurring SUD and receipt of a benzodiazepine; in fact, prescribing benzodiazepines decreased slightly when patients in the overall sample had a co-occurring SUD. However, among patients with co-occurring SUDs who were non-Hispanic white or aged 55 and older, their odds of receiving a benzodiazepine were significantly greater. In Table 3, the results of the moderation analysis found that Non-Hispanic white patients with a co-occurring SUD had significantly higher odds of being prescribed a benzodiazepine compared to non-whites with an SUD (OR=3.34, CI: 1.55–7.22). In Table 4, the results found that prescribing a benzodiazepine to individuals with an SUD also varied as a function of older age. Patients 55 and older with an SUD had significantly higher odds of being prescribed a benzodiazepine compared to patients under the age of 55 with an SUD (OR: 2.01, CI: 1.01–4.02).

4.1 Discussion

Overall we found high rates of prescribing benzodiazepines across community mental health settings, with 19.9% of patients in the overall sample receiving a prescription, including 35.1% of those with a co-occurring SUD. While alcohol withdrawal and individual cases may warrant exceptions, it is concerning that a third of patients presenting with co-occurring

SUDs were prescribed a drug that substantially increases their risk for dependence and overdose. Our findings also suggest that this practice may be driven by patient age and race. A decrease, though not statistically significant, was found in the odds of receiving a benzodiazepine among people with a co-occurring SUD compared to those without an SUD. However, when patients with a co-occurring SUD were Non-Hispanic white or older, these patients had significantly greater odds of receiving a benzodiazepine prescription than their older and non-white counterparts.

These findings, which are specific to community mental health settings, mirror prescribing patterns identified in other contexts. Greater rates of prescribing benzodiazepines to white individuals compared to minority patients have been found in a number of studies, paralleling patterns of prescribing other controlled substances including opioids (Agarwal & Landon, 2019; O'Brien et al, 2017; Paulozzi, Strickler, Kreiner & Koris, 2015; Cook et al, 2018; Pletcher, Kertesz, Kohn & Gonzales, 2008). Our age-related findings are also concerning given that benzodiazepines increase risk for adverse events in both elderly and substance using populations, making them particularly ill-suited for those with both characteristics (Olfson, King & Schoenbaum, 2015; Fick et al, 2015). Our results point to the need for continued efforts to address cultural competency, implicit bias, and the way that race, ethnicity and age impact the therapeutic relationship (Chapman, Kaatz, & Carnes, 2013; Pletcher et al, 2008).

In addition to the potential impact of patient socio-demographics on prescribing decisions, the overall high rates of using benzodiazepines to treat patients with co-occurring SUDs documented in this study warrants attention. Our findings specific to community mental health settings reflect those reported in other settings (Peters et al, 2015; Kroll et al, 2016) and this practice appears to be continuing despite recommendations these drugs be avoided with this population (Miller et al, 2019; Stoller, 2016). Less risky interventions are instead recommended; for example, in the case of co-occurring substance use and anxiety disorders, selective serotonin reuptake inhibitors (SSRIs) and non-pharmacological interventions such as cognitive behavioral therapy are preferable (Miller et al, 2019; Stoller, 2016). When benzodiazepines are unavoidable, safeguards including limiting the duration of use, choosing long-acting agents with less addictive potential, and checking prescription monitoring programs (PDMPs) can mitigate risk (Miller et al, 2019). Finally, engaging patients in a process of shared decision making and collaboratively assessing the risks and benefits of any psychiatric medication remains at the core of ethical practice (Drake & Deegan, 2009).

Mental health service systems should also work to address the functional reasons people with co-occurring SUDs have for using benzodiazepines, such as to manage anxiety, the impact of trauma, and the effects of withdrawal from other drugs (Mateu-Gelabert et al, 2017; Motta-Ochoa, Bertrand, Arruda, Jutras-Aswad & Roy, 2017). Restrictive measures that fail to address the functional needs benzodiazepines serve may simply shift people's use to different and more dangerous drugs (Lembke, Papac, & Humphreys, 2018; Herzberg, Guarino, Mateu-Gelabert, & Bennett, 2016). People with SUDs have high rates of trauma and anxiety disorders are common, making integrated, trauma-informed services essential (Quinn et al, 2016; Dube et al, 2003; Priester et al., 2016). The integrated treatment model

(i.e. treatment that targets both problems together) leads to better outcomes, yet many individuals with co-occurring SUDs continue to receive fragmented services (McHugh, 2015; Priester et al., 2016).

4.3 Limitations

This study has several limitations. Prescribing rates were determined from one treatment source, the community mental health site alone. Individuals are often prescribed controlled substances from multiple providers, thus our rates may under-estimate receipt of a prescription. Drug diversion among this population is also common. Receipt of a benzodiazepine cannot presume that individuals were filling and adhering to their prescriptions, only that they received one. Finally, it is also possible that some diagnoses such as the presence of an SUD were not adequately screened for and may have been missed or not recorded during assessments.

5.1 Conclusion

Despite serious risks, over a third of people with a co-occurring SUD treated in community mental health settings received a benzodiazepine prescription and prescribing appeared to be influenced by biased decision making.

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Table 1:

Patient Clinical and Demographic Characteristics Including Differences Between Groups (Benzodiazepine Prescribed Yes/No)

	Total (774)		Benzodiazepine Prescribed (n=154)		Benzodiazepines Not Prescribed (n=619)		p-value
	n	%	n	%	N	%	
Entire Sample	774	100%	154	19.9	620	80.1	
Co-occurring SUD							.114
Yes	311	40.7	54	35.1	257	42.1	
No	454	59.3	100	64.9	354	57.9	
Gender							<.000
Female	347	45.0	95	61.7	252	40.8	
Male	424	55.0	59	38.3	365	59.2	
Race/Ethnicity							.001
White	470	60.7	113	73.4	357	57.6	
Black	147	19	14	9.1	133	21.5	
Hispanic	60	7.8	10	6.5	50	8.1	
Other/Don't Know	97	12.5	17	11	80	12.9	
Age (in years)							<.000
18–24	128	16.8	8	5.2	120	19.7	
25–34	107	14	13	8.4	94	15.5	
35–44	114	15	23	14.9	91	15.0	
45–54	172	22.6	44	28.6	128	21.1	
55 and older	241	31.6	66	42.9	175	28.8	
Primary Diagnosis							.464
Other Disorder	149	19.3	25	16.3	124	20.1	
Psychotic Disorder	315	40.9	64	41.8	251	40.6	
Bipolar Disorder	143	18.5	34	22.2	109	17.6	
Depressive Disorder	164	21.3	30	19.6	134	21.7	
Anxiety Disorder							.013
Yes	187	24.2	49	31.8	138	22.3	
No	587	75.8	105	68.2	482	77.7	

Differences between groups tested by Pearson χ^2

Table 2:

Multivariate logistic regression results estimating factors associated with receipt of a benzodiazepine prescription among patients treated in 14 sites

Main Effects		
	Odds Ratio	95% CI
Co-occurring SUD		
No (Ref)		
Yes	0.77	.50–1.17
Gender		
Male (Ref)		
Female	1.96 **	1.31–2.94
Race/Ethnicity		
Non-white (Ref)		
White	1.79 *	1.15–2.80
Age (in years)		
18–24 (Ref)		
25–34	2.21	.85–5.78
35–44	4.71 **	1.92–11.62
45–54	6.41 **	2.75–14.95
55 and older	6.29 **	2.72–14.51
Primary Diagnosis		
Other Disorder (Ref)		
Psychotic Disorder	1.36	.73–2.54
Bipolar Disorder	1.40	.72–2.73
Depressive Disorder	0.76	.38–1.52
Anxiety Disorder		
No (Ref)		
Yes	2.15 **	1.35–3.43

*
p<.05;

**
p<.01

Table 3:

Odds of Receiving a Benzodiazepine Prescription Among White Individuals with Substance Use Disorders Compared to Non-White Individuals with Substance Use Disorders

Interaction between SUD X White Race		
	Odds Ratio	95% CI
SUD X White Race	3.34 **	1.55–7.22
Gender		
Male (Ref)		
Female	2.00 **	1.33–3.00
Age (in years)		
18–24 (Ref)		
25–34	2.24	.86–5.85
35–44	4.92 **	1.99–12.15
45–54	6.71 **	2.87–15.68
55 and older	6.62 **	2.86–15.32
Primary Diagnosis		
Other Disorder (Ref)		
Psychotic Disorder	1.34	.72–2.49
Bipolar Disorder	1.37	.70–2.66
Depressive Disorder	0.74	.37–1.50
Anxiety Disorder		
No (Ref)		
Yes	2.23 *	1.40–3.57

*
p<.05;

**
p<.01

Table 4:

Odds of Receiving a Benzodiazepine Prescription Among 55 and Older Patients with Substance Use Disorders Compared to Younger Patients with Substance Use Disorders

Interaction between SUD X 55 and Older		
	Odds Ratio	95% CI
SUD X 55 and Older	2.01 **	1.01–4.02
Gender		
Male (Ref)		
Female	2.07 **	1.39–3.08
Race/Ethnicity		
Non-white (Ref)		
White	1.81 **	1.17–2.81
Primary Diagnosis		
Other Disorder (Ref)		
Psychotic Disorder	1.49	.80–2.76
Bipolar Disorder	1.39	.72–2.67
Depressive Disorder	0.82	.42–1.62
Anxiety Disorder		
No (Ref)		
Yes	1.80 *	1.15–2.82

*
p<.05;

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p<.01