ORIGINAL RESEARCH

Prevalence of Substance Misuse in New Patients in an Outpatient Psychiatry Clinic Using a Prescription Monitoring Program

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ABSTRACT

Objective: To investigate the value of a prescription monitoring program in identifying prescription drug misuse among patients presenting to a resident physician outpatient psychiatry clinic at an academic medical center.

Method: Participants were 314 new patients aged 18 years or older presenting to the clinic from October 2011 to June 2012. Resident physicians completed a data collection form for each participant using information from the patient interview and from the prescription monitoring program report. Prescription drug misuse was defined as having any 1 of the following 5 criteria in the prescription monitoring program report: (1) filled prescriptions for 2 or more controlled substances, (2) obtained prescriptions from 2 or more providers, (3) obtained early refills, (4) used 3 or more pharmacies, and (5) the prescription monitoring program report conflicted with the patient's report.

Results: At least 1 indicator of prescription drug misuse was found in 41.7% of patients. Over 69% of the patients that the residents believed were misusing prescription drugs actually met 1 of the criteria for prescription drug misuse. The prescription monitoring program report changed the management only 2.2% of the time. Patients with prior benzodiazepine use ($\chi^2_1 = 17.68$, $P < .001$), prior opioid use ($\chi^2_1 = 19.98$, $P < .001$), a personality disorder ($\chi^2_1 = 7.22$, $P < .001$), and chronic pain ($\chi^2_1 = 14.31$, $P < .001$) had a higher percentage of prescription drug misuse compared to patients without these factors.

Conclusions: Using the prescription monitoring program to screen patients with prior benzodiazepine and opioid use, with a personality disorder, and/or with chronic pain may be useful in confirming the suspicion of prescription drug misuse identified at the initial evaluation.

Prescription drug misuse is a growing problem. The rate of chronic nonmedical use of prescription pain relievers rose by nearly 75% between 2002–2003 and 2009–2010.[1] People between the ages of 26 and 49 years and males experienced the greatest increase in prescription medicine abuse.[1] The increase in prescription drug abuse has coincided with a 115% increase in the number of emergency department visits involving prescription drug misuse or abuse between 2004 and 2010.[2] The increase in prescription drug abuse has also coincided with an increase in drug overdose mortality rates. The majority of overdose deaths in West Virginia in 2006 were associated with nonmedical use and diversion of prescription drugs, primarily opioid analgesics.[3] Prescription monitoring programs have been implemented in response to these trends, although these programs are limited in that they only record prescription drugs obtained from prescribers. In the United States as of May 2012, every state or district except 3 had enacted legislation enabling a prescription monitoring program, and 43 states had an operational program.[4,5] Currently, a significant gap exists between awareness of prescription monitoring program resources and informed utilization. In 1 state with a prescription monitoring program, 84% of physicians surveyed were aware of its existence, but less than 59% had ever used it.[6]

Regardless of the percentage of providers who use the prescription monitoring program, its implementation can affect the diversion of prescription drugs, trends in opioid abuse, and prescribing behavior. The indicators of doctor shopping decreased after the implementation of a prescription monitoring program for buprenorphine in a region in France.[7] There was a smaller increase in poison center intentional opioid exposures and a smaller increase in opioid treatment admissions in states with a prescription monitoring program versus states without such a program.[8] When emergency department physicians reviewed prescription monitoring program data before discharging patients, they altered opioid prescribing for 74 of 179 (41%) patients.[9] However, prescription monitoring programs were not significantly associated with lower rates of drug overdose or opioid overdose mortality or lower rates of consumption of opioid drugs, indicating the need for more research on best practices.[10,11] Several studies have noted an association between nonmedical use of opioids and mental health and pain comorbidities,[12–15] including an association between personality disorder and prescription drug misuse.[16,17] Psychiatric outpatient visits are also associated with a risk for prescription opioid abuse.[18]

This study examined the epidemiology of prescription drug misuse and the utility of the prescription monitoring program in identifying prescription drug misuse in the setting of a resident physicians' outpatient psychiatry clinic at an academic medical center. Understanding this epidemiology will help guide the creation of effective screening tools and best-use policies for prescription monitoring program information.

METHOD

Participants

Eligible participants were 559 consecutive new patients aged ≥ 18 years presenting from October 2011 to June 2012 to a resident physician outpatient psychiatry clinic at an academic medical center. Patients who had been living in the state of Virginia for less than 3 months were excluded due to the potential for no available information in the prescription monitoring program. The prescription monitoring program lists the patient's name, the pharmacy where the prescription was filled, the provider who wrote the prescription, and the date that the prescription was filled for all class II substances. Notation in the prescription monitoring program may take up to 2 weeks. All providers in the state may see the results for their patients. Patient permission is not required.

Participants with incomplete data collection forms (described below) were excluded. Deidentified information from 314 completed data collection forms (56% of eligible participants) was entered into a statistical software database for analysis. There were no statistically significant differences ($P \le .01$) in age, sex, or presenting complaint between the 314 participants with complete data and the 245 participants with incomplete data.

Procedures

Following the institutional review board–approved protocol, which did not require informed consent, the PGY-III resident physician completed a data collection form with information including demographics, substance use history, history of chronic pain, social history (disability, legal charges), psychiatric diagnoses (Axes I and II), whether the patient asked for a prescription drug by name, and whether the resident thought the patient was misusing prescription drugs. After the patient interview, the resident examined the prescription monitoring program report encompassing the year prior to the encounter and completed the remainder of the data collection form using the information contained in the report including the number of providers, controlled substances, and pharmacies reported; the presence of early refills (within 25 days of having been dispensed a controlled substance); whether there was more than 1 substance prescribed in a single drug class; whether the prescription

monitoring program report matched the patient's report; and whether the prescription monitoring program report changed the management of the patient.

Prescription drug misuse. Participants were judged as having prescription drug misuse if any 1 of the predetermined criteria were present in the prescription monitoring program report: (1) filled prescriptions for 2 or more controlled substances, (2) obtained prescriptions from 2 or more providers, (3) obtained early refills, (4) used 3 or more pharmacies, and (5) the prescription monitoring program report conflicted with the patient's report.

History of substance use. Substance use history consisted of tobacco use, history of illicit substance abuse, history of alcohol abuse, prior detoxification/rehabilitation, prior benzodiazepine use, prior opioid use, and prior stimulant use.

Data Analysis

Risk criteria included demographic and substance use characteristics associated with prescription opioid abuse[19]: aged 18–34 years, male sex, and prior diagnostic history of substance abuse, depression, and posttraumatic stress disorder (PTSD). Given the relatively small number of participants, univariate χ^2 analyses (including odds ratios [ORs], as an estimate of relative risk, with 95% CIs) and t tests, as appropriate, were used to investigate the relationship of each risk factor to prescription drug misuse ($P \le .01$ to minimize type 1 error). Further exploratory analyses investigated the association of other factors of interest to prescription drug misuse and the association of each risk factor to each of the 5 individual criteria for prescription drug misuse. Due to small cell sizes, several of these exploratory analyses have large confidence intervals, and others do not merit inclusion.

RESULTS

Patient Characteristics

Participants were 188 women and 126 men aged 18–70 years (mean age = 38.6 years). Nearly 18% of patients were receiving disability payments; 69 patients (22.0%) had children living in their home; and 48 (15.3%) had a history of criminal charges. Sixty-seven patients (21.3%) asked for a prescription drug by name.

History of Substance Use Associated With Prescription Drug Misuse

Of the participants, 109 (34.7%) had previously used some form of controlled prescription drug. The distinction between using prescription drugs obtained by prescription or through other means was not recorded. Sixty-nine participants (22.0%) had used benzodiazepines, 46 (14.6%) had used opioids, and 48 (15.3%) had used prescription stimulants. An appreciable minority had a history of substance abuse (45.5%), reporting at least 1 of the following: history of illicit substance abuse (31.2%), history of alcohol abuse (34.7%), and prior detoxification or rehabilitation (7.3%). Seventy-five (23.9%) participants were currently using or had a history of

Table 1. Statistically Significant Associations Between Various Factors and the Resident Physician's Assessment of Prescription Drug Misuse

Factor	$\chi^2 (df=1)$	P Value
Prior benzodiazepine use	6.835	.009
Prior use of benzodiazepine/opioid/stimulant	9.001	.003
Tobacco use	17.821	<.001
History of illicit substance abuse	15.420	<.001
History of alcohol abuse	9.001	.003
Combined variable, any substance abuse	11.586	.001
Patient asked for a drug by name	52.182	<.001

using tobacco. Approximately 7.3% of participants (23/314) had a *DSM-IV* Axis I substance-related disorder.[20]

At least 1 of the 5 indicators of prescription drug misuse was found in 41.7% of patients (15.0% met 1 criterion, 15.9% met 2 criteria, 7.0% met 3 criteria, 3.2% met 4 criteria, and 0.6% met all 5 criteria). Three substance use factors had statistically significant associations with prescription drug misuse: prior benzodiazepine use ($\chi^2_1 = 17.68$, $P < .001$), prior opioid use ($\chi^2_1 = 19.98$, $P < .001$), and prior benzodiazepine, opioid, and/or stimulant use ($\chi^2_1 = 17.75$, $P < .001$).

Diagnoses Associated With Prescription Drug Misuse

For *DSM-IV* Axis I diagnoses, 62.1% (195/314) of patients had a mood disorder, 43.9% (138/314) had a major depressive disorder, and 15.0% (47/314) had bipolar disorder. One-third (104/314) had an anxiety disorder, with 5.4% (17/314) of all patients having PTSD specifically. Attention-deficit/hyperactivity disorder was diagnosed in 9.6% (30/314) of participants. Over 85% (269/314) had no Axis II diagnosis or diagnosis was deferred; 0.3% (1/314) had a cluster A diagnosis, 8.9% (28/314) had a cluster B diagnosis, 1.0% (3/314) had a cluster C diagnosis, and 4.1% (13/314) had a diagnosis of personality disorder not otherwise specified.[20] Additionally, 17.2% (54/314) of patients had chronic pain.

Three diagnoses had statistically significant associations with prescription drug misuse: anxiety disorder ($\chi^2_1 = 7.67$, $P < .001$), personality disorder ($\chi^2_1 = 7.22$, $P < .001$), and chronic pain ($\chi^2_1 = 14.31$, $P < .001$). Having a personality disorder or chronic pain was associated with a higher probability of prescription drug misuse, while having an anxiety disorder reduced such risk. Fewer patients with an anxiety disorder than without an anxiety disorder (30.8% vs 47.1%, respectively) met criteria for prescription drug misuse. More patients with a personality disorder than without a personality disorder (60.0% vs 38.7%, respectively) met criteria for prescription drug misuse. More patients with chronic pain than without chronic pain (46.3% vs 25.4%, respectively) met criteria for prescription drug misuse.

Resident Assessment

Prior to viewing the prescription monitoring program report, the resident predicted that 8.3% (26/314) of the patients were misusing prescription drugs. This assessment was associated with multiple factors (Table 1).

When the resident predicted that the patient was misusing prescription drugs, the prescription monitoring program report matched the patient's report 57.7% (15/26) of the time compared to 93.4% (269/288) of the time when the resident believed that the patient was not misusing prescription drugs. The resident's assessment was associated with prescription drug misuse ($\chi^2_1 = 8.824$; $P = .003$; $RR = 3.485$; 95% CI, 1.466–8.282), with 69.2% of the patients that the resident believed were misusing prescription drugs meeting 1 of the criteria for prescription drug misuse; 39% of those whom the resident believed were not misusing prescription drugs met 1 of the criteria.

The Prescription Monitoring Program Report

Overall, the prescription monitoring program report matched the patient's report 90.4% (284/314) of the time. A substantial minority of patients (45.5%) were not filling prescriptions for any controlled substances according to the prescription monitoring program report. Of the 171 patients who were obtaining controlled substances, the mean number of health care providers was 2.15 (SD = 1.50; range, 1–9), the mean number of pharmacies used was 1.86 (SD = 1.42; range, 1–14), and the mean number of controlled substances was 1.98 (SD = 1.30; range, 1–8). The prescription monitoring program revealed that 46.8% had 1 provider, 19.9% had 2 providers, and 33.3% had 3 or more prescribing providers. Over 90% used 1 to 3 pharmacies, and 88.3% used 1 to 3 controlled substances. The number of providers was positively correlated with the number of controlled substances ($R = 0.835$, $P < .001$) and the number of pharmacies ($R = 0.750$, $P < .001$). The number of controlled substances was positively correlated with the number of pharmacies ($R = 0.738$, $P < .001$). Nearly 20% of patients were prescribed more than 1 controlled substance in the same class; only a small percentage (4.5%) obtained an early refill.

The prescription monitoring program report changed the planned management only 2.2% (7/314) of the time. Even when the prescription monitoring program report did not match the patient's report, the prescription monitoring program did not typically change planned patient management (93.3%, 28/30).

Exploratory Analyses

Multiple factors were associated with individual criteria of prescription drug misuse (Table 2). Table 3 shows the mean differences in the number of controlled substances, providers, and pharmacies between participants who met individual criteria and participants who did not.

Gender

Gender was not associated with prescription drug misuse ($\chi^2_1 = 2.351$, $P = .125$), prior benzodiazepine use ($\chi^2_1 = 3.458$, $P = .063$), prior opioid use ($\chi^2_1 = 0.031$, $P = .860$), or whether the prescription monitoring program report matched the patient's report ($\chi^2_1 = 0.637$, $P = .425$). There was no difference in the number of controlled substances ($t_{311.958} = 2.266$, $P = .024$), number of providers ($t_{310.642} = 1.890$, $P = .60$), or number of pharmacies ($t_{311.840} = 1.471$, $P = .142$) between men and women.

Table 2. Statistically Significant Associations Between Various Factors and the Individual Criteria of Prescription Drug Misuse

Individual Criteria of Prescription Drug Misuse	2 or More Controlled Substances (χ^2)[a]	2 or More Providers (χ^2)[a]	3 or More Pharmacies (χ^2)[a]
Prior benzodiazepine use	27.825***	26.091***	NS
Prior opioid use	36.080***	30.382***	12.432***
Prior stimulant use	6.622**	NS	NS
Prior benzodiazepine, opioid, and/or stimulant use	25.254***	25.725***	NS
Tobacco use	6.591**	NS	NS
Mood disorder	7.670**	5.918*	NS
Personality disorder	13.406***	6.103*	NS
History of criminal charges	10.688***	NS	NS
Asking for a prescription drug by name	5.993*	5.301*	7.780**

[a]$df = 1$.
*$P \leq .02$.
**$P \leq .01$.
***$P < .001$.
Abbreviation: NS = not statistically significant.

Age

Differences by age were analyzed using the cut-point of age 35 years. Patients less than 35 years were significantly less likely to have prior stimulant use ($\chi^2_1 = 8.241$; $P = .004$; OR = 0.391; 95% CI, 0.203–0.754) and used fewer providers ($t_{293.931} = -3.276$, $P < .001$), controlled substances ($t_{291.473} = -3.898$, $P < .001$), and pharmacies ($t_{312} = -2.856$, $P = .005$). Patients aged ≥ 35 years were significantly more likely to use 2 or more controlled substances ($\chi^2_1 = 9.361$; $P = .002$; OR = 2.187; 95% CI, 1.318–3.629) and more likely to have early refills ($\chi^2_1 = 7.344$; $P = .007$; OR = 6.329; 95% CI, 1.393–28.763).

DISCUSSION

The rate of substance abuse (45.5%) among new patients presenting to an outpatient psychiatry clinic emphasizes the need for careful prescribing and monitoring of controlled prescription drugs, especially among patients with prior use of opioids and benzodiazepines. Tobacco use, a history of illicit substance abuse, a history of alcohol abuse, prior detoxification/rehabilitation, an Axis I diagnosis of a substance-related disorder, and a history of criminal charges may be less important factors when screening for prescription drug misuse in this population.

Suspicion should be increased when patients have diagnoses of personality disorder and/or chronic pain because a higher proportion of these patients met this study's criteria for prescription drug misuse. Interestingly, a smaller proportion of patients with an anxiety disorder (including PTSD) showed prescription drug misuse compared to patients without an anxiety disorder perhaps suggesting their use of controlled substances may be appropriate and monitored. Suspicion should also be heightened when a patient asks for a prescription drug by name. Gender was not a significant risk factor, but age group was associated with several individual criteria of prescription drug misuse.

The resident's prediction of prescription drug misuse was statistically associated with prior use of benzodiazepine/

Table 3. Differences in the Number of Controlled Substances, Providers, and Pharmacies Between Participants Who Met Individual Criteria of Prescription Drug Misuse and Participants Who Did Not[a]

Individual Criteria of Prescription Drug Misuse	Difference in the Number of Controlled Substances (t test)[a]	Difference in the Number of Providers (t test)[a]	Difference in the Number of Pharmacies (t test)[a]
Prior benzodiazepine use	1.12**	1.01**	0.60*
Prior opioid use	1.54**	1.58**	1.23**
Prior stimulant use	0.74**	0.63*	0.85*
Prior benzodiazepine, opioid, and/or stimulant use	0.95**	0.95**	0.82**
Mood disorder	0.51**	0.45*	NS
Asking for a prescription drug by name	0.56*	0.75*	NS

[a]$df = 312$.
*$P \leq .01$.
**$P < .001$.
Abbreviation: NS = not statistically significant.

opioid/stimulant, tobacco use, history of illicit substance abuse, history of alcohol abuse, any substance use history, and whether the patient asked for a substance by name. Nearly 70% of the patients that the resident believed were misusing prescription drugs actually met 1 of the criteria for prescription drug misuse. However, almost 40% of the patients that the resident believed were not misusing prescription drugs met 1 of the criteria for prescription drug misuse. Additionally, when the resident predicted that the patient was misusing prescription drugs, the prescription monitoring program report matched the patient's report 57.7% (15/26) of the time compared to 93.4% (269/288) of the time when the resident predicted appropriate use.

The results of the prescription monitoring program reports in this study were consistent with a study of Massachusetts prescription monitoring program records for schedule II opioids, which found that most individuals (87.5%) used 1 to 2 prescribers, used 1 to 2 pharmacies, and had no early refills.[19] The likelihood of using multiple providers was associated with receiving prescriptions for multiple different controlled drugs, which replicated findings from another study.[21] Use of multiple providers was also associated with use of multiple pharmacies. If there is suspicion that the patient is misusing, the provider should obtain a prescription monitoring program report.

Limitations

The major limitation of this study was the nonrandom sampling of new patients because data collection forms were not completed for every consecutive new patient, primarily related to time constraints in the busy resident physician clinic; noncompletion rates were similar across residents. The study also did not use confirmatory urine drug screening. Generalizability of results to private practice outpatient psychiatry clinics is limited, although this academic center is located in a small city with no other large psychiatric outpatient service. The patient population seen at this clinic therefore is more likely to be representative of patients seen in general outpatient psychiatric clinics in

urban areas. Studies vary in the definition of prescription drug misuse. Others have used a greater number of providers, controlled substances, and pharmacies.[3,22] This study did not include information on drug doses or prescription drugs obtained from sources other than prescribers.[23,24] Prescription monitoring programs in general do not record illicit procurement of these substances.

Future Practice and Research

Future research should examine best practices for use of prescription monitoring programs to identify prescription drug misuse and examine interventions for the patients with prescription drug misuse (41.7% of all patients in this study). Diversion of prescription opioids may be reduced by prescriber education focusing on recognition of patient misuse and/or diversion.[25] The US Food and Drug Administration is now requiring pharmaceutical companies that manufacture extended-release/long-acting opioid analgesics to provide education for prescribers via continuing education activities supported by pharmaceutical company educational grants.[26] The best way to utilize prescription monitoring program data must be part of this educational process.

CONCLUSION

Every new patient presenting to an outpatient psychiatry clinic need not be screened using the prescription monitoring program. The prescription monitoring program report matched the patient's report 90.4% of the time, and the prescription monitoring program report changed the management only 2.2% of the time. However, it would be logical to use the prescription monitoring program report to screen selected patients, such as those who reported previous use of some form of controlled prescription substance (benzodiazepines, opioids, and/or stimulants) and those with diagnoses of personality disorder and/or chronic pain.

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