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Substance Abuse Among Patients Diagnosed With Insomnia

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Background

Insomnia is a disorder characterized by difficulty falling asleep, difficulty staying asleep, or waking up too early.[1] Pharmacological therapies used to treat insomnia include sedating antidepressants, benzodiazepines (BZDs), newer benzodiazepine receptor agonists (BzRAs), and ramelteon, a melatonin receptor agonist.[2] Studies have shown that both BZDs and BzRAs may lead to tolerance and abuse,[3,4] but few epidemiological studies have assessed ramelteon. The aims of this study were to profile the demographic and clinical characteristics of patients prescribed BZDs, BzRAs, or ramelteon, and to compare the rates of substance abuse between the 3 medication cohorts.

Methods

- A retrospective matched cohort design employing data from the Florida Medicaid database (July 1, 2001-June 30, 2006) was used for this analysis.
- The Florida Medicaid database consists of several linkable files (based on an encrypted patient identification number) including an eligibility records file, an administrative claims file (inpatient and outpatient services), and pharmacy claims.
- Adults 18-64 years of age were included in the analysis.
- Patients were required to have received at least 1 BzRA, BZD, or ramelteon prescription between July 1, 2002, and June 30, 2006 (date of first such pharmacy claim denoted as the "index date").
- Patients were required to be eligible for complete fee-for-service Medicaid benefits and not be dually eligible for at least 12 months prior and at least 3 months following the index date.
- Patients were excluded from the study if they had received a prescription for an insomnia medication or had a substance abuse claim in the 6 months prior to the index date.
- Each ramelteon patient was matched to 3 BzRA and 3 BZD patients based on age, gender, race/ethnicity, and prior diagnosis of insomnia, depression, and anxiety.
- Demographic and clinical characteristics were assessed for each medication cohort.
- Substance abuse events related to sedatives and hypnotics were identified from medical claims denoted with selected diagnosis codes.
  - 304.1x – sedative, hypnotic, or anxiolytic dependence
  - 305.4x – sedative, hypnotic, or anxiolytic abuse
  - 967.xx – poisoning by sedatives or hypnotics
  - V65.42 – counseling for substance use and abuse
- The rate of substance abuse per 100 patient-years of exposure was calculated for each cohort by dividing the number of patients with 1 or more substance abuse claims by the total number of months of exposure and multiplying by 1,200.

Results

- A total of 140 ramelteon patients were matched to 420 BzRA and 420 BZD patients.
- Demographic characteristics in the 12 months prior to the index date for each medication cohort are shown in Table 1.
- Clinical characteristics in the 12 months prior to the index date for each medication cohort are shown in Table 2.
- Ramelteon patients had a higher overall chronic comorbidity profile versus BzRA and BZD patients as measured by the Charlson Comorbidity Score (1.4 vs 0.6/0.7 for BzRA/BZD, respectively, $P<0.01$).
- The majority of substance abuse claims were diagnosed as dependence or abuse of sedatives, hypnotics, or anxiety medications (Table 3).
- The rate of substance abuse per 100 patient-years of exposure to insomnia medications was 0.00 for ramelteon patients, 1.84 for BzRA patients, and 2.51 for BZD patients (Table 3).

Table 1. Baseline Demographic Characteristics by Medication Cohort (12 Months Prior to Index Date)

Characteristic	Ramelteon n=140	BzRA n=420	BZD n=420
Age groups[1] (%)			
18 to 34 years	14.3	14.3	14.3
35 to 44 years	28.6	28.6	28.6
45 to 54 years	35.7	35.7	35.7
55 to 64 years	21.4	21.4	21.4
Mean age (SD)	45.6 (9.5)	45.6 (9.1)	45.6 (9.1)
Gender[1] (%)			
Male	35.7	35.7	35.7
Female	64.3	64.3	64.3
Race/ethnicity (%)			
White[1]	57.1	57.1	57.1
African American	28.6	11.4	12.4
Hispanic	7.1	23.1	19.5
Asian	0.0	0.0	0.5
American Indian	0.0	0.0	0.0
Other	7.1	8.4	10.5

[1]Variable used in the matching algorithm.

Table 2. Baseline Clinical Characteristics by Medication Cohort (12 Months Prior to Index Date)

Characteristic	Ramelteon n=140	BzRA n=420	BZD n=420
Substance abuse claim[1] (%)	0.0	0.0	0.0
Insomnia diagnosis[1] (%)	7.1	7.1	7.1
Mental health comorbidity (%)			
Depression[1]	50.7	50.7	50.7
Anxiety[1]	14.3	14.3	14.3
Bipolar disorder	42.9	8.5	11.0
Comorbidity associated with sleeping difficulty (%)			
Obesity	22.1	4.1	4.1
Chronic respiratory disease	50.7	28.5	26.9

[1]Variable used in the matching algorithm.

Table 3. Utilization of Insomnia Medications and Rates of Substance Abuse by Medication Cohort

Characteristic	Ramelteon n=140	BzRA n=420	BZD n=420
Mean (SD) number of pharmacy claims	5.9 (6.1)	13.5 (14.2)	12.2 (17.5)
Number of substance abuse claims	0	11	13
Mean (SD) months of medication therapy	5.6 (5.7)	17.1 (16.6)	14.8 (16.1)
Rate of substance abuse per 100 patient-years of medication therapy	0.00	1.84	2.51

Limitations

- The medical claims did not reveal whether patients actually ingested any of the medications.
- Without access to patients' actual medical records, the study could not verify substance abuse claims.
- It was difficult to control for disparity in non-matched clinical characteristics since there was no variability in the dependent variable for ramelteon patients.

Conclusions

- These initial data suggest that ramelteon patients were less likely to use medical services for substance abuse than BzRA or BZD patients.
- Additional data from a larger number of patients are needed to substantiate these findings.

References

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