INCREMENTAL HEALTH BENEFITS COST OF BIPOLAR DISORDER AMONG INSURED EMPLOYEES

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Abstract

Objective: To determine the economic impact of bipolar disorder from an employer's perspective.

Methods: Medical, pharmacy, workers' compensation, short- and long-term disability, and sick leave costs were examined in a database consisting of 2001-2002 claims, payroll, and demographic data from more than 6 large US-based employers. Regression modeling was used to measure the cost differences between employees with bipolar disorder and employees without bipolar disorder while controlling for age, tenure, gender, salary, region, and other factors.

Results: Data were available for 761 employees with bipolar disorder and a control group of 229,145 employees without bipolar disorder. The group with bipolar disorder had higher costs, with a 217% difference ($6836) across all measures ($P \leq 0.05$). The differences in medical and pharmacy costs were $3860 and $1866, respectively. Paid absence costs had differences of $254 in workers' compensation, $668 in short-term disability, $108 in long-term disability, and $80 in sick leave.

Conclusions: The impact of bipolar disorder can be costly, not only in terms of healthcare costs but also in its impact on lost productivity due to absenteeism. Employer-based interventions focusing on managing bipolar disorder should be evaluated and implemented to manage the potential short- and long-term economic impact of this illness.

Introduction

- Bipolar disorder, also known as manic-depressive illness, is a severe psychiatric condition. If uncontrolled, bipolar disorder follows a lifelong course of manic and depressive mood swings, interspersed with apparently normal mood.[1] The frequent lapses and chronic course of the disease represent significant direct and indirect costs, including increased use of inpatient and outpatient medical services and pharmacotherapy, as well as lost productivity.[2] A recent cost-of-illness study found that the lifetime cost for all patients with bipolar disorder with an onset in 1998 in the United States was $24 billion.[3]
- Employers are becoming increasingly aware of the productivity-related burden imposed by disease conditions manifested by work absence and on-the-job productivity losses.[4] A better understanding of lost time and reduced productivity in employees with bipolar disorder is important in the implementation of coordinated programs for managing health and productivity-related outcomes.

Objective

- Determine the economic impact of bipolar disorder from an employer's perspective

Methods

Data Sources

- A retrospective database of 2001–2002 adjudicated claims, payroll, and demographic data from the Human Capital Management Services (HCMS) Research Reference Database was used to determine the differences in health benefits costs between employees with and without bipolar disorder.
- The database consisted of more than 230,000 employees who had medical and prescription drug coverage and were employed at several large US-based employers in retail, service, manufacturing, and financial industries.

Cohort Selection and Index Dates

- Bipolar disorder cohort: a diagnosis of bipolar disorder, based on criteria stipulated in *International Classification of Diseases, Ninth Revision*. The index date is the date of an employee's first diagnosis of bipolar disorder in 2001.
- Nonbipolar disorder cohort: no diagnosis of bipolar disorder. The index date is the average index date from the bipolar disorder cohort in 2001.

Data Analysis

- Cost outcome measures: both direct and indirect costs were measured during the year immediately following the index date in 2001.
- Direct cost measures:
  - Medical
  - Pharmacy
  - Workers' compensation
  - Short-term disability
  - Long-term disability
  - Sick leave costs
- The study used a human capital approach to calculate indirect cost measures:
  - Earnings lost because of reduced work, attributable to bipolar disorder
- Two-stage regression modeling was used to measure the cost differences between employee cohorts with and without bipolar disorder.
- A two-stage regression model for each benefit type was preferred because:
  - The cost outcome variables examined were not normally distributed, had extreme outliers, did not have balanced cohort sizes, and did not have constant variances
  - Many observations were zero for cost or lost time value
- Separate regression analyses were run for each of the cost outcome variables. In each case, the regression models controlled for the impact of other confounding factors, including age, tenure, gender, marital status, race, exempt/nonexempt status, full-time/part-time status, salary, and region as defined by the first digit of the employee's ZIP code.

Results

Employee Characteristics

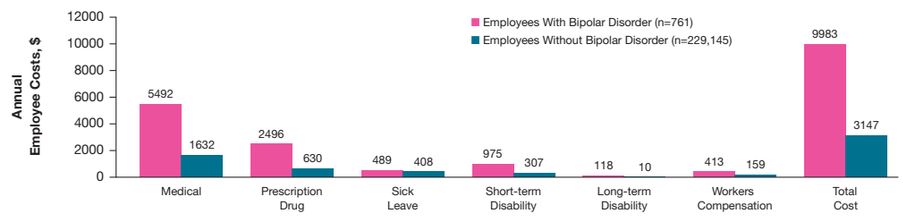
- In 2001, a total of 761 employees (0.3%) with bipolar disorder and a control group of 229,145 employees without bipolar disorder were identified.
- The demographic features of the employee cohorts with and without bipolar disorder are presented in the **Table**.
- Employees with bipolar disorder were older, more often female, less often married, and more often white than controls. Also, employees with bipolar disorder had more tenure and were more often in full-time employment.

Table. Demographic Features of Employees With and Without Bipolar Disorder

	Employees With Bipolar Disorder (n=761)			Employees Without Bipolar Disorder (n=229,145)		
	Mean	Lower 95% Confidence Limit for Mean	Upper 95% Confidence Limit for Mean	Mean	Lower 95% Confidence Limit for Mean	Upper 95% Confidence Limit for Mean
Age at index date*	41.2	40.5	41.8	40.4	40.4	40.5
Tenure at index date	10.6	10.0	11.3	9.8	9.7	9.8
Annual salary†	$47,351	$45,685	$49,017	$48,468	$48,072	$48,864
Female, %	54.4	50.9	57.9	44.5	44.3	44.7
Married, %‡	46.2	42.4	49.9	56.0	55.8	56.2
White, %§	83.5	79.6	87.5	65.1	64.8	65.3
Black, %	9.1	6.0	12.2	21.3	21.1	21.5
Hispanic, %	4.1	2.0	6.2	8.0	7.8	8.1
Exempt, %	21.2	18.2	24.1	27.3	27.1	27.5
Full-time, %	89.1	86.9	91.3	85.7	85.6	85.8

Due to incomplete data:
*Age data are based on 229,127 employees without bipolar disorder.
†The salary data are based on 760 employees with and 225,641 employees without bipolar disorder.
‡The percentage married data are based on 676 employees with and 206,343 employees without bipolar disorder.
§The racial data are based on 340 employees with and 152,124 employees without bipolar disorder.

Figure. Health benefits cost comparison



- Employees with bipolar disorder missed a mean of 18.9 workdays annually compared with 7.4 days for controls. Most time lost by employees with bipolar disorder (58%) occurred under short-term disability benefit.

Regression Modeling Results

- The **Figure** presents the health benefits cost comparison between the cohorts.
- Employees with bipolar disorder had higher total costs, with a mean 217% difference ($6836) across all measures ($P \leq 0.05$).
- Mean differences in medical and pharmacy costs were $3860 and $1866, respectively.
- Mean work absence costs of the employees with bipolar disorder were $1111 higher than in the nonbipolar disorder group, with differences of:
  - $254 in workers' compensation
  - $668 in short-term disability
  - $108 in long-term disability
  - $80 in sick leave
- All cost differences between groups were significant ($P<0.05$).

Conclusions

- **The impact of bipolar disorder can be costly not only in terms of healthcare expense but also in terms of lost productivity due to absenteeism.**
- **Improved patient management of bipolar disorder, including earlier recognition and utilization of optimal pharmacotherapy, would likely lower the economic impact.**
- **Employer-based interventions focusing on the management of bipolar disorder should be evaluated and implemented to manage the short- and long-term economic impact.**

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