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Sleep Problems, Psychiatric Hospitalization, and Emergency Department Use Among Medicaid Psychiatric Patients

Christopher N. Kaufmann, M.H.S.¹, Adam P. Spira, Ph.D.¹, Donald Rae, M.A.², Joyce C. West, Ph.D., M.P.P.², and Ramin Mojtabai, M.D., Ph.D., M.P.H.¹

¹Johns Hopkins Bloomberg School of Public Health, Department of Mental Health, Baltimore, Maryland. ²American Psychiatric Institute for Research and Education, Psychiatric Practice Research Network, Arlington, Virginia

Abstract

OBJECTIVE—This study examined the prevalence of sleep problems, and their relationship with the use of inpatient and emergency department services among Medicaid psychiatric patients.

METHODS—Participants were 1,560 Medicaid psychiatric patients identified in a ten-state random survey of psychiatrists. Sleep problems were assessed by clinician ratings.

RESULTS—Over 75% of Medicaid psychiatric patients experienced a sleep problem, and in approximately 50% of patients these problems were moderate to severe. Greater sleep problem severity was associated with an increased risk of psychiatric hospitalization and emergency department visits for mental health reasons.

CONCLUSIONS—Sleep problems are highly prevalent among Medicaid patients, and are associated with greater inpatient and emergency mental health service use. More careful monitoring and management of sleep problems in this patient population would address a common clinical need and might also help to reduce costly service use.

INTRODUCTION

Sleep problems are prevalent among psychiatric patients with common mood and anxiety disorders (1, 2) and associated with more severe medical and psychological conditions (3) and greater health service utilization and costs in these populations (4). However, the prevalence and implications of sleep problems for patients with severe mental illnesses are not as well known. An improved understanding of the prevalence, correlates and the implications of sleep disturbances for health care utilization in this patient population could provide useful guidance for design of services and targeted treatments.

In the present study, we examined the prevalence and severity of psychiatrist-rated sleep problems in a large sample of Medicaid psychiatric patients. We also explored associations between these problems and clinical factors, as well as the association of sleep problems

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with psychiatric hospitalizations and emergency department use. We hypothesized that patients with sleep problems would be more likely to have psychiatric hospitalizations and psychiatric emergency department visits than those without sleep problems, and that the use of these services would be more prevalent in patients with more severe sleep problems.

METHODS

Participants were 1,560 patients reported on by a randomly selected group of psychiatrists identified using the American Medical Association's Physician Master-file of all physicians in the United States. Data were collected by mail from September to December 2006. Psychiatrists were excluded if they did not treat Medicaid patients in their last typical work week, were psychiatry residents, had undeliverable addresses, or had limited contact with patients. A total of 2,671 (62%) responded, of whom 857 (32%) met eligibility requirements. Each psychiatrist was asked to complete a questionnaire concerning the next two Medicaid patients that they saw during their last typical work week, after one of the 21 randomly assigned start days and times. Psychiatrists were offered \$75 compensation for completing the questionnaire. Data were available for 1,625 Medicaid patients reported on by the eligible psychiatrists. We excluded from this sample patients whose psychiatrists either reported not knowing if they had sleep problems (N=11), or failed to provide sleep data (N=54), resulting in a final sample of 1,560 patients. The study procedures were approved by the institutional review board of the American Psychiatric Institute for Research and Education (APIRE). More details on the design of the study are provided elsewhere (5).

Psychiatrists were asked to provide information on the patients' demographic characteristics, diagnoses based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM-IV-TR), prescribed medications, and the current severity of a number of psychiatric symptoms, including sleep problems (SuppF1). Response options were "none," "mild," "moderate," and "severe."

The patients' health service utilization was measured by a series of items, including queries about psychiatric hospitalization and emergency department use. Psychiatrists recorded the number of days a patient was hospitalized and the number of emergency department visits that were a result of a patient's psychiatric illness since January 1, 2006. For this study, we examined the association of sleep problems with psychiatric hospitalizations of at least one day, and with any emergency service use.

Analyses were conducted in three stages. We first examined the prevalence and severity of sleep problems in our sample. Next, we explored the demographic and clinical correlates of sleep problems in this sample of patients. For these analyses, a *sleep score* ranging from 0 (no sleep problem) to 3 (severe sleep problems) was computed based on the psychiatrist ratings. The sleep score was compared across groups with different demographic and clinical characteristics. Finally, we assessed the association of sleep problems with psychiatric hospitalization (any vs. none) and emergency service use (any vs. none) in binary logistic regression models, controlling for demographic and clinical characteristics. Estimates were weighted by the clinician's Medicaid caseload, as well as the number of psychiatrists treating Medicaid patients in each state.

RESULTS

Patients' demographic and clinical characteristics are presented in Table 1. The majority (56%) was under 36 years of age. Approximately half were male and half were white. Psychiatrists treated nearly half of these patients (46%) in public outpatient clinics;

approximately one-third were treated in private outpatient clinics (17%) or solo/group private office settings (17%). Almost 30% of these patients had a diagnosis of schizophrenia, over 20% were diagnosed with major depression, and close to 20% had bipolar disorder. Approximately 38% of patients carried more than one psychiatric diagnosis and almost 84% had at least one comorbid medical condition. The psychiatric symptoms rated most often by psychiatrists as “moderate” or “severe” were anxiety (51%), depressive (48%) and psychotic symptoms (28%). A total of 55% of patients were prescribed antipsychotics, 50% antidepressants, 25% mood stabilizers, 20% benzodiazepines, and 6% non-benzodiazepine hypnotics.

Overall, 78% (N=1,211) of patients were rated by their psychiatrists as having some sleep problems. Approximately 29% (N=450) were rated as having mild, 36% (N=560) moderate and 13% (N=201) severe sleep problems. The sleep problems were associated with a number of patient demographic and clinical characteristics as well as treatment setting characteristics. More severe sleep problems were found in patients 18 years old or older compared to younger patients, females compared to males, Hispanic patients compared to non-Hispanic whites, patients treated in inpatient settings compared to other settings, patients with mood and substance use disorders compared to patients without these disorders, patients with 2 psychiatric comorbid conditions compared to those with no comorbid conditions, patients with moderate to severe mood, anxiety, psychotic or substance use symptoms compared to those with no or mild symptoms, patients with more than one comorbid medical condition compared to no comorbid medical conditions, and patients prescribed antidepressants, benzodiazepines, mood stabilizers, and non-benzodiazepine hypnotics compared to those not prescribed these medications. Patients with schizophrenia and childhood disorders had less severe sleep problems compared to patients without these diagnoses (Table 1).

Four hundred ninety two (28%) patients in this sample had at least one psychiatric hospitalization, and 560 (34%) patients visited an emergency department at least once in the time period since January 1, 2006. In multivariate analyses, patients with sleep problems had greater odds of psychiatric hospitalization compared to those with no sleep problems (Adjusted Odds Ratio [AOR]=1.51, 95% Confidence Interval [CI]=1.04-2.19 for mild vs. no problems; AOR=1.98, 95% CI=1.35-2.90 for moderate vs. no problems and AOR=1.68, 95% CI=1.06-2.68 for severe vs. no problems) (SuppT2). In addition, patients with sleep problems had a greater odds of emergency service use compared to those with no sleep problems (AOR=1.29, 95% CI=.91-1.83 for mild vs. no problems; AOR=1.79, 95% CI=1.26-2.55 for moderate vs. no problems and AOR=2.37, 95% CI=1.52-3.70 for severe vs. no problems) (SuppT3).

DISCUSSION

In this study, we examined the prevalence and correlates of sleep problems in a sample of Medicaid psychiatric patients, and the association of sleep problems with psychiatric hospitalizations and emergency department use. The study had two main findings. First, four out of every five patients in this sample had some sleep problems as rated by their psychiatrists. Furthermore, half of patients had either “moderate” or “severe” problems, suggesting that sleep problems are highly prevalent in this population.

To put these findings in perspective, epidemiological studies on sleep problems in the general population record a self-reported prevalence of approximately 10 to 33% depending on the definitions used for the sleep problems, with older adults having the highest prevalence (6). Epidemiological studies of sleep problems in primary care settings report a prevalence of approximately 50% (7). Our estimates of sleep problems in this sample of

patients with severe and persistent mental disorders is similar to those from patients with more common conditions generally known to be associated with significant sleep problems such as depression, generalized anxiety disorder, panic disorder and post-traumatic stress disorder, 70-90% of whom present with some form of sleep problems (2). Even among patients with diagnoses of schizophrenia or childhood disorders in our sample--two diagnoses with fewer sleep problems --over 70% were rated as having some sleep problems and large proportions had moderate to severe problems (Table 1).

The high prevalence of sleep problems in this patient population calls for better monitoring and management of these problems in various treatment settings. The use of standardized measures in routine practice settings may improve clinicians' ability to screen for and diagnose sleep disturbances and monitor treatment responses of patients treated for these complaints. A number of validated instruments are available for this purpose, including the Pittsburgh Sleep Quality Index (8) and the Insomnia Severity Index (9). These instruments are easily administered, and can be used in patients with different psychiatric diagnoses.

Physicians most commonly rely on medications to address sleep problems of their patients (10). Medication treatments can be effectively combined with various non-pharmacological interventions for insomnia (7, 11, 12). These non-pharmacological interventions are based on generalizable behavioral principles and have been effectively used in patients with sleep disorders associated with physical and more common psychiatric conditions. However, there is little research on the application of these interventions in patients with more severe mental disorders. Future research is required to assess the feasibility and effectiveness of these interventions in this patient population and especially the added benefits of combinations of these treatments with the common pharmacological interventions. Research also needs to explore strategies to most efficiently disseminate these non-pharmacological interventions in routine treatment settings.

The second noteworthy finding of this study was the significant association of sleep problems with psychiatric hospitalization and emergency department use for psychiatric reasons. While this study did not examine the factors that could mediate this relationship, past research has found an association between sleep problems and suicidal ideations and behaviors (13), which, in turn, are among the most common reasons for emergency department use and psychiatric hospitalization (14, 15). This and other potential mechanisms linking sleep problems with emergency service use and psychiatric hospitalization need to be assessed in future studies using a longitudinal design.

The results of this study should to be considered in the context of its limitations, including the cross-sectional design, the use of a global measure of sleep problems, which did not distinguish between different types of sleep problems, and reliance on psychiatrists' reports rather than objective measures of sleep. Furthermore, the sample was limited to Medicaid patients with severe and persistent mental disorders who, typically, have fewer financial resources and may be especially prone to sleep problems and their adverse consequences.

In the context of these limitations, the results of this study provide a first glimpse at a significant clinical problem with far-reaching implications for service use and cost of care in this patient population. The findings call for better assessment, monitoring and management of sleep problems among patients with severe mental disorders. Behavioral interventions alone or in conjunction with sleep aid medications have been shown to be effective in treatment of sleep problems in a range of clinical conditions (7, 10). Future research needs to specifically assess the feasibility and effectiveness of these interventions among patients with severe mental disorders treated in routine practice settings.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1
Socio-demographic and clinical correlates of sleep problems in Medicaid psychiatric patients.

Characteristic	Sleep Problems												Linear Regression Results ^c										
	Total sample (N=1560)			None (N=349)			Mild (N=450)			Moderate (N=560)			Severe (N=201)			Score ^b	Mean	SE	B	SE	P		
	N	% ^a	Column	N	% ^a	Row	N	% ^a	Row	N	% ^a	Row	N	% ^a	Row								
Age																							
<18	366	30.5	108	27.7	120	32.3	112	34.9	26	5.1	2.17	.06	.00	--	Ref.								
18-35	429	25.5	88	17.3	113	27.6	160	35.7	68	19.5	2.57	.08	.33	.07	<.001								
36-45	362	23.2	77	20.2	105	21.6	136	43.0	44	15.2	2.53	.09	.25	.07	<.001								
>45	381	20.8	73	16.3	109	27.7	139	42.2	60	13.8	2.54	.07	.34	.07	<.001								
Sex																							
Female	812	50.6	153	17.6	226	25.2	314	41.9	119	15.3	2.55	.05	.00	--	Ref.								
Male	733	49.4	192	23.6	220	29.8	239	35.8	82	10.7	2.34	.05	-.20	.05	<.001								
Race/ethnicity																							
Non-Hispanic white	911	53.8	193	19.3	281	29.8	328	38.6	109	12.4	2.44	.05	.00	--	Ref.								
African American	412	27.1	108	24.7	112	25.6	136	35.9	56	13.8	2.39	.07	-.05	.06	.418								
Hispanic	183	14.3	36	21.0	43	21.8	72	42.8	32	14.4	2.51	.10	.16	.08	.047								
Other, mixed, or unknown	54	4.7	12	13.4	14	27.4	24	50.2	4	9.0	2.55	.16	-.02	.13	.893								
Treatment setting																							
Public outpatient clinic	623	45.6	155	24.1	181	26.2	209	36.6	78	13.0	2.39	.06	.00	--	Ref.								
Private outpatient clinic	278	17.0	68	21.2	92	37.6	89	30.8	29	10.4	2.30	.09	-.05	.07	.445								
Solo or group private office	294	16.5	56	17.0	101	22.5	100	47.9	37	12.7	2.56	.09	.06	.07	.340								
Public inpatient	113	6.6	18	15.0	28	23.1	43	36.5	24	25.3	2.72	.13	.31	.10	.002								
Private inpatient	119	6.7	16	10.1	17	10.4	68	68.8	18	10.7	2.80	.08	.40	.09	<.001								
Nursing home or other	112	7.6	31	21.3	27	38.1	41	29.8	13	10.8	2.30	.13	-.02	.10	.879								
Diagnosis ^d																							
Schizophrenia	444	28.1	129	24.5	136	25.6	132	36.7	47	13.2	2.39	.07	-.24	.05	<.001								
Major depression	380	21.5	58	13.9	102	26.3	165	43.5	55	16.3	2.62	.09	.24	.06	<.001								
Bipolar disorder	307	19.6	44	17.0	74	23.5	123	38.6	66	20.8	2.63	.08	.37	.06	<.001								

Characteristic	Sleep Problems												Linear Regression Results ^c							
	Total sample (N=1560)			None (N=349)			Mild (N=450)			Moderate (N=560)			Severe (N=201)			Mean	SE	B	SE	p
	N	% ^a	Row % ^a	N	% ^a	Row % ^a	N	% ^a	Row % ^a	N	% ^a	Row % ^a	N	% ^a	Row % ^a					
Anxiety disorder	275	16.9	53	19.5	77	20.3	107	41.3	38	18.9	2.60	.11	.10	.06	.128					
Childhood disorder	360	28.7	114	28.7	123	34.1	98	32.5	25	4.7	2.13	.07	-.39	.06	<.001					
Substance use disorder	208	13.7	31	13.6	59	23.9	85	48.1	33	14.4	2.63	.08	.21	.07	.002					
Other disorder	289	14.8	55	15.5	95	37.0	107	37.6	32	9.9	2.42	.07	.01	.06	.865					
Psychiatric comorbidity																				
1 disorder	944	62.0	232	22.1	261	27.7	337	39.0	114	11.2	2.39	.05	.00	--	Ref.					
2 disorders	506	31.7	95	17.9	157	25.8	181	39.9	73	16.4	2.55	.07	.11	.05	.047					
3 or more disorders	110	6.2	22	21.7	32	31.6	42	34.5	14	12.2	2.37	.12	.08	.10	.384					
Moderate to severe symptoms ^e																				
Depressive symptoms	770	47.8	72	8.0	192	23.5	355	49.0	151	19.6	2.80	.05	.72	.05	<.001					
Anxiety symptoms	801	50.9	86	8.9	191	21.5	366	48.7	158	20.9	2.82	.05	.72	.05	<.001					
Psychotic symptoms	425	28.3	71	14.6	101	18.7	168	44.8	85	21.9	2.74	.07	.32	.06	<.001					
Manic symptoms	210	13.6	26	12.1	35	13.6	91	50.4	58	23.9	2.86	.08	.54	.07	<.001					
Alcohol or other substance use symptoms	264	16.2	17	7.0	60	22.6	129	47.6	58	22.8	2.86	.08	.57	.06	<.001					
General medical conditions																				
None	272	16.1	70	24.0	84	25.1	88	36.7	30	14.1	2.41	.10	.00	--	Ref.					
1 condition	850	58.8	208	23.3	244	29.3	305	36.6	93	10.8	2.35	.05	.05	.07	.494					
2 or more conditions	438	25.1	71	12.5	122	24.3	167	46.1	78	17.1	2.68	.06	.29	.07	<.001					
Psychiatric medication prescribed ^f																				
Antidepressants	859	49.8	157	15.1	242	26.8	336	42.0	124	16.2	2.59	.05	.23	.05	<.001					
Antipsychotics	852	55.3	197	21.5	227	24.0	303	40.0	125	14.5	2.48	.05	.05	.05	.264					
Benzodiazepines	337	20.1	45	15.5	97	22.0	135	40.8	60	21.6	2.69	.10	.29	.06	<.001					
Mood stabilizers	407	24.8	78	17.8	113	22.9	152	45.3	64	14.0	2.55	.06	.14	.06	.013					
Non-benzodiazepine hypnotics	74	5.5	6	11.2	20	29.1	30	32.8	18	26.8	2.75	.18	.44	.11	<.001					

^aPercentages are weighted to an estimated 43,000 Medicaid patients in ten states.

^bBased on a score of 0 for no sleep problems, 1 for mild problems, 2 for moderate problems, and 3 for severe problems.

^cB stands for the un-standardized regression coefficient and SE for the standard error of the coefficient obtained in bivariate linear regression analyses. Analyses were weighted by the clinician's Medicaid caseload, as well as the number of psychiatrists treating Medicaid patients in each state.

^dSome patients carried more than one diagnosis. Therefore, percentages add up to more than 100%. Patients with each diagnosis were compared with all other patients not carrying that diagnosis. For example, patients with a diagnosis of schizophrenia were compared with all patients without a diagnosis of schizophrenia.

^eFor each group of symptoms, patients with moderate/severe symptoms were compared to patients with mild/no symptoms.

^fSome patients were prescribed more than one type of medication. Therefore, percentages add up to more than 100%. Patients prescribed each type of medication were compared to all other patients not prescribed that type of medication.