

Comorbidities and Risk Factors in Insomnia in the Elderly population

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Introduction

- Sleep disorders affect around 50-70 million Americans, with chronic insomnia being the most common. There has been an 11-fold increase in the diagnosis of insomnia in the U.S. outpatient office visits (1993-2015)
- Insomnia is more common in the elderly population (30-48%) compared to the general population (12-20%)
- It is imperative to identify the modifiable risk factors in order to optimize management for better outcome.

Study Aims

- To study the modifiable risk factors and comorbid medical conditions associated with insomnia in patients who were 65 years-old, or older.

Materials/Methods

- Retrospective chart review study of the existing electronic medical records of patients who visited Cooper Internal Medicine office at 1103 N Kings Hwy, Cherry Hill NJ, between the dates of 07/01/2020 and 06/30/2021.
- Inclusion criteria: all patients aged 65 years or older
- Data was collected for each patient from existing electronic medical records
- Statistical analysis:
 - Patients were divided into two groups: patients who had insomnia and patients who did not have insomnia.
 - Univariate analysis was performed with independent t-test, and Mann Whitney U-test. Chi Square test and Fisher exact test were applied to analyze the categorical variables.
 - Logistic regression was used to model the outcome of insomnia

Variable	Variable	Patients with Insomnia (n=247)	Patients without Insomnia (n=2,184)	P
Age	Years, mean (SD)	77.3 (8.1)	76.7 (7.5)	0.211
Sex	Male, n (%)	91(36.8)	971 (44.5)	0.022
	Female, n (%)	156 (63.2)	1213 (55.5)	
Race	White, n (%)	196 (79.4)	1686 (77.2)	0.449
	Black, n (%)	40 (16.1)	411 (18.8)	
	Other, n (%)	11 (4.5)	87 (4.0)	
Social	Tobacco use, n (%)	100 (40.5)	960 (44.0)	0.297
	Alcohol use, n (%)	130 (52.6)	1132 (51.8)	0.811
	Recreational drug use, n (%)	7 (2.8)	53 (2.4)	0.698
Vitals	Systolic BP (mmHg), mean (SD)	126 (17)	129 (36)	0.453
	Diastolic BP (mmHg), mean (SD)	74 (9)	74 (10)	0.764
Weight	BMI (kg/m ²), mean (SD)	27.5 (5.5)	28.1 (6.0)	0.201
Lab Values	Total Cholesterol (mg/dL), mean (SD)	172.2 (43.5)	169.6 (59.1)	0.500
	LDL (mg/dL), mean (SD)	94.9 (34.5)	91.9 (35.1)	0.209
	HDL (mg/dL), mean (SD)	55.8 (15.9)	56.8 (41.5)	0.704
	TG (mg/dL), mean (SD)	102.7 (54.1)	112.0 (64.2)	0.006
	Vit B ₁₂ (pg/mL), mean (SD)	753.1 (536.3)	765.9 (601.7)	0.792
	Vit D (ng/mL), mean (SD)	37.7 (13.2)	39.4 (17.5)	0.204
	eGFR (ml/min/1.73m ²), mean (SD)	61.6 (15.8)	62.1 (16.9)	0.699
	Hb (g/dL), mean (SD)	12.9 (1.9)	12.9 (2.7)	0.938
	TSH (mIU/L), (median, 25 th -75 th)	2.00 (1.20-3.08)	2.01 (1.31-3.00)	0.639
	Folate (ng/mL), (median, 25 th -75 th)	16.8 (12.5-20.0)	17.0 (11.7-20.0)	0.807
ALT (U/L), (median, 25 th -75 th)	17 (13-22)	17 (13-23)	0.389	
AST (U/L), (median, 25 th -75 th)	20 (17-25)	21 (17-25)	0.764	

Variable	Variable	Patients with Insomnia (n=247)	Patients without Insomnia (n=2,184)	P
Comorbidities	Hypertension, n (%)	212 (85.9)	1797 (82.3)	0.619
	DM, n (%)	66 (26.7)	623 (28.5)	0.551
	CVA, n (%)	88 (4.4)	137 (6.3)	0.388
	Seizure, n (%)	4 (1.6)	33 (1.5)	0.786
	TBI, n (%)	1 (0.4)	11 (0.5)	1.000
	Dementia, n (%)	16 (6.5)	74 (3.4)	0.015
	Parkinson's Ds, n (%)	2 (0.8)	19 (0.9)	1.000
	Depression, n (%)	76 (30.8)	326 (14.9)	<0.001
	Bipolar Ds, n (%)	3 (1.2)	21 (1.0)	0.729
	Anxiety Dis, n (%)	85 (34.4)	380 (17.4)	<0.001
	Schizophrenia, n (%)	0 (0.0)	7 (0.3)	1.000
	CAD, n (%)	54 (21.9)	448 (20.5)	0.619
	CHF, n (%)	18 (7.3)	134 (6.1)	0.478
	Atrial fibrillation, n (%)	48 (19.4)	293 (13.4)	0.010
	Other cardiac arrhythmias, n (%)	34 (13.8)	279 (12.8)	0.660
	COPD, n (%)	19 (7.7)	142 (6.5)	0.499
	Asthma, n (%)	35 (14.2)	237 (10.9)	0.117
	OSA, n (%)	38 (15.4)	269 (12.3)	0.169
	GERD, n (%)	88 (35.6)	675 (30.9)	0.130
	Cirrhosis, n (%)	3 (1.2)	22 (1.0)	0.736
	CKD, n (%)	40 (16.2)	287 (13.1)	0.183
	Anemia, n (%)	44 (17.8)	306 (14.0)	0.107
	Cancer, n (%)	84 (34.0)	623 (28.5)	0.072
Hypothyroidism, n (%)	47 (19.0)	386 (17.7)	0.600	
Hyperthyroidism, n (%)	2 (0.8)	21 (1.0)	1.000	
Osteoarthritis, n (%)	89 (36.0)	659 (30.2)	0.059	
Other Rheum Ds, n (%)	41 (16.6)	458 (21.0)	0.107	
Peripheral neuropathy, n (%)	21 (8.5)	153 (7.0)	0.388	
Chronic pain dis, n (%)	81 (32.8)	412 (18.9)	<0.001	

Variable	Variable	Patients with Insomnia (n=247)	Patients without Insomnia (n=2,184)	P
Medications	Antihypertensive Med, n (%)	177 (72.0)	1496 (68.6)	0.281
	OHA, n (%)	43 (17.4)	451 (20.7)	0.229
	Statin, n (%)	151 (61.1)	1374 (62.9)	0.578
	Antidepressants, n (%)	98 (39.7)	468 (21.4)	<0.001
	Benzodiazepines, n (%)	60 (24.3)	266 (12.2)	<0.001
	Non-benz sleep med, n (%)	54 (21.9)	69 (3.2)	<0.001
	Anticoagulants, n (%)	66 (26.7)	455 (20.8)	0.033
	Antiepileptic med, n (%)	29 (11.7)	181 (8.3)	0.067
	LABA, n (%)	9 (3.6)	110 (5.0)	0.336
	SABA, n (%)	43 (17.4)	294 (13.5)	0.089
	PPI, n (%)	82 (33.2)	628 (28.8)	0.147
	CNS stimulants, n (%)	6 (2.4)	33 (1.5)	0.279
Antihistamines, n (%)	56 (22.7)	502 (23.0)	0.909	
Mortality	Dead, n (%)	16 (6.5)	95 (4.3)	0.129

n = Number of patients, SD = Standard deviation, BP = Blood pressure, BMI = Body mass index, LDL = Low-density lipoprotein, HDL = High-density lipoprotein, TG = Triglycerides, Vit B₁₂ = Vitamin B₁₂, Vit D = Vitamin D, eGFR = Estimated glomerular filtration rate, Hb = Hemoglobin, TSH = Thyroid stimulating hormone, ALT = Alanine transaminase, AST = Aspartate aminotransferase, DM = Diabetes mellitus, CVA = Cerebrovascular accident, TBI = Traumatic brain injury, Parkinson's Ds = Parkinson's disease, Bipolar Ds = Bipolar disorder, Anxiety Dis = Anxiety disorder, CAD = Coronary artery disease, CHF = Congestive heart failure, COPD = Chronic obstructive pulmonary disease, OSA = Obstructive sleep apnea, GERD = Gastroesophageal reflux disorder, , CKD = Chronic kidney disease, Other Rheum Ds = Other rheumatological disorders, Chronic pain dis = Chronic pain disorder, OHA = Oral hypoglycemic agent, Non-benz sleep med = Non-benzodiazepine sleeping medication, LABA = Long acting beta2 agonist, SABA = Short acting beta2 agent, PPI = Proton pump inhibitor, CNS = Central nervous system.

Results

- Total subjects in study: 2431 patients
 - 247 (10.2%) had insomnia
 - mean age insomnia group: 77±8.1 years
 - mean age without insomnia: 76 ± 7.5 years
- Greater frequency of insomnia in women compared to men in insomnia group (63.2% vs 55.5%; P=0.022)
- In insomnia group, there were significantly higher frequencies of association of the following comorbidities compared to the group without insomnia:
 - dementia (6.5% vs 3.4%; P=0.015)
 - depression (30.8% vs 14.9%; P<0.001)
 - anxiety disorder (34.4% vs 17.4%; P<0.001)
 - atrial fibrillation (19.4% vs 13.4%; P=0.01)
 - chronic pain disorders (32.8% vs 18.9%; P<0.001)
- Logistic regression analysis showed significantly greater odds of insomnia in patient who had:
 - depression (OR 1.860, 95% CI 1.342-2.576; P<0.001)
 - anxiety disorder (OR 1.845, 95% CI 1.342-2.537; P<0.001),
 - chronic pain disorder (OR 1.901, 95% CI 1.417-2.549; P<0.001)

Conclusion

- Elderly women have higher association of insomnia.
- Dementia, depression, anxiety, atrial fibrillation, and chronic pain disorders are associated with insomnia in elderly patients.
- Presence of depression, anxiety and chronic pain disorders are associated with greater odds of having insomnia in elderly patients.
- Optimal management of the comorbidities, such as dementia, depression, anxiety, atrial fibrillation, and chronic pain disorders, may prevent or improve insomnia in this population.