Supplementary Material

Article Title: Recognition and Management of Obstructive Sleep Apnea in Psychiatric Practice

Authors: Ruth M. Benca, MD, PhD; Andrew Krystal, MD; Craig Chepke, MD, FAPA; and Karl Doghramji, MD

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List of Supplementary Material for the article

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Supplementary Table 1. Studies assessing the prevalence of OSA or risk of OSA in patients with psychiatric disorders[a5-7,18-24]

Condition Study	Study Type	Population Description (number of patients or number of studies)	OSA Assessment/Criteria	Prevalence or Risk of OSA
Psychiatric Disorders				
Nasr et al, 2010	Retrospective chart review	Psychiatric outpatients (N=330)	PSG and clinical notes	9.7%
Stubbs et al, 2016	Meta-analysis	Clinical studies (N=1535)	Varied by study (overnight PSG and oxyhemoglobin desaturation; RDI>10; RDI>5 major events/hr; AHI≥5; AHI≥15)	Pooled prevalence (95% CI): 25.7% (13.9, 42.4)
		Population-based studies (N=2 studies; N=568,586)	Varied by study (ICD diagnosis code; PSG and AHI>5)	Pooled prevalence (95% CI): 10.7 (2.4, 37.0)
Tanielian et al, 2020	Chart review	Psychiatric inpatients (N=91)	Risk of OSA (STOP-Bang)	High risk: 58.2%
Depression				
Gupta et al, 2015	Systematic review	Clinic-based studies (N=8 studies)	Varied by study (RDI>10; overnight PSG and oxyhemoglobin desaturation; RDI>5 major events/hr; AHI ≥5; AHI≥15; AHI>5, ICSD-2)	Median (range): 48.1% (0–66)
		Population-based studies (N=2 studies)	Varied by study (AHI≥5 or ICD-9-CM diagnosis codes)	Range: 7.4%–44%
Stubbs et al, 2016	Meta-analysis	Clinic-based studies (N=6 studies)	Varied by study (overnight PSG and oxyhemoglobin desaturation; RDI>10; RDI>5 major events/hr; AHI≥5; AHI≥15)	Pooled prevalence (95% CI): 36.3% (19.4, 57.4)
		Population-based studies (N=2 studies)	Varied by study (ICD diagnosis code; PSG and AHI>5)	Pooled prevalence (95% CI): 19.8% (2.5, 70.0)
Hein et al, 2017	Prospective observational study	Clinical sleep laboratory sample (N=703)	AHI≥15	13.9%
Fehr et al, 2018	Retrospective chart review	Veteran outpatients (N=378)	AHI≥5	37.8%

McCall et al, 2019	Clinical trial (eligibility assessment)	Suicidal patients with MDD (N=125)	AHI>10	14%
			AHI>5	21.6%
Hombali et al, 2019[b]	Cross-sectional study	Psychiatric outpatients (N=180)	British Association of Psychopharmacology diagnostic questions	Prevalence of symptoms of sleep breathing disorder: 15.5%[c]
PTSD				
Gupta et al, 2015	Systematic review	Clinic-based studies (N=7 studies)	Varied by study (RDI>10; AASM guidelines for SDB; AHI≥5; AHI>5; AHI>10; ICSD-2, AHI>5)	Median (range): 42.7% (1.3–83)
		Population-based studies (N=2 studies)	ICD-9-CM diagnosis codes; AHI≥5	Range: 46.4%–50%
Colvonen et al, 2015	Cross-sectional study	Outpatient veterans (N=195)	Berlin questionnaire (OSA risk)	High risk: 69.2%
Zhang, 2017 *Sleep Med*	Meta-analysis	N=12 studies	AHI ≥5	Pooled prevalence (95% CI): 75.7% (44.1, 92.5)
			AHI≥10	Pooled prevalence (95% CI): 43.6% (20.6, 69.7)
Fehr et al, 2018	Retrospective chart review	Veteran outpatients (N=378)	AHI≥5	35.3%
Anxiety Disorders				
Gupta et al, 2015	Systematic review	Clinic-based studies (N=1 study)	ICSD-2, AHI>5	47.5%[d]
		Population-based studies (N=2 studies)	Varied by study (ICD-9-CM diagnosis codes; AHI≥5)	Range: 6.4%–58.1% [excludes PTSD]
Hombali et al, 2019[b]	Cross-sectional study	Psychiatric outpatients (N=100)	British Association of Psychopharmacology diagnostic questions	16.0%
Bipolar Disorders				
Gupta et al, 2015	Systematic review	Clinic-based studies (N=4 studies)	Varied by study (RDI>10, PSG, AHI≥5, AHI≥15 or AHI≥5 with EDS)	Median (range): 19.8% (2.9–69)
		Population-based studies (N=1 study)	ICD-9-CM diagnosis codes	6.9%

Stubbs et al, 2016	Meta-analysis	Clinic-based studies (N=5) and population-based studies (N=1)	Varied by study (AHI>5; AHI≥15 or AHI≥5 with EDS)	Pooled prevalence (95% CI): 24.5% (10.6, 47.1)
Fehr et al, 2018	Retrospective chart review	Veteran outpatients (N=378)	AHI≥5	16.7%
Schizophrenia				
Gupta et al, 2015	Systematic review	Clinic-based studies (N=2 studies)	Varied by study (overnight PSG and oxyhemoglobin desaturation; RDI>10)	Range: 0.7–47.8%
Stubbs et al, 2016	Meta-analysis	Clinic-based studies (N=329)	Varied by study (RDI>10; overnight PSG and oxyhemoglobin desaturation)	Pooled prevalence (95% CI): 15.4% (5.3, 37.1)
Hombali et al, 2019[b]	Cross-sectional study	Psychiatric outpatients (N=120)	British Association of Psychopharmacology diagnostic questions	11.6%
Pooled Schizophrenia and Psychotic Disorders				
Gupta et al, 2015	Systematic review	Clinic-based studies (N=1 study)	RDI≥10	48%
		Population-based studies (N=1 study)	ICD-9-CM diagnosis codes	4.52%
Alcohol Dependence				
Sharafkhaneh et al, 2005	Retrospective cross-sectional database review	Veterans Health Administration database (N=206,810)	ICD-9-CM diagnosis codes	3.3%
Substance Abuse				
Sharafkhaneh et al, 2005	Retrospective cross-sectional database review	Veterans Health Administration database (N=119,699)	ICD-9-CM diagnosis codes	3.4%
Dementia				
Sharafkhaneh et al, 2005	Retrospective cross-sectional database review	Veterans Health Administration database (N=66,328)	ICD-9-CM diagnosis codes	3.9%

AHI, apnea hypopnea index; CI, confidence interval; ICD-9-CM, *International Classification of Diseases, Clinical Modification*; EDS, excessive daytime sleepiness; ICSD, *International Classification of Sleep Disorders*; MDD, major depressive disorder; OSA, obstructive sleep apnea; PSG, polysomnography; PTSD, post-traumatic stress disorder; RDI, respiratory disturbance index; SDB, sleep-disordered breathing; STOP-Bang, Snoring, Tiredness, Observed Apnea, High BP-BMI, Age, Neck Circumference, and Gender questionnaire.
[a]No studies were identified that examined the prevalence of OSA in patients with attention deficit disorder/attention deficit hyperactivity disorder.
[b]Assesses the prevalence of symptoms of sleep-disordered breathing.
[c]Includes patients with mood disorder (bipolar and depressive disorder).
[d]Includes patients with PTSD.