

Awakening to the dangers

of



obstructive sleep apnea

OSA, as well as other sleep disorders, often co-exists with mental illness. Optimal care involves treating the 2 problems concurrently.

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Estimates are that 50 to 70 million Americans suffer from a chronic disorder of sleep and wakefulness, hindering daily functioning and affecting health.¹ Psychiatric illness is common among people who have a sleep disorder. The relationship between psychiatric illness and sleep disorders is bidirectional: People with mental illness often have sleep complaints, and a primary sleep disorder often results in neuropsychiatric complications.

What is obstructive sleep apnea?

The most common type of sleep-disordered breathing, obstructive sleep apnea (OSA) is characterized by frequent cessations of breathing during sleep because of an obstruction of the upper airway. The obstruction occurs secondary to inadequate motor tone of the tongue or airway dilator muscles, or both.¹ In addition, many people with OSA have central apneic episodes, in which breathing stops temporarily without airway blockage or respiratory effort.²

The prevalence of OSA is growing as obesity in the United States increases. Risk factors for OSA include obesity, a craniofacial abnormality, an upper-airway abnormality, heredity, smoking, and nasal congestion. OSA plays a role in causing and exacerbating medical illness in people with severe and persistent mental illness, contributing to a significantly shortened life span. Attending to the general health of people who suffer from severe mental illness—including effective



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Executive dysfunction can be a feature of obstructive sleep apnea



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Table 1

Common symptoms of obstructive sleep apnea

Nocturnal symptoms

Choking and gasping
Reflux symptoms
Restless sleep
Snoring
Witnessed apneas

Daytime symptoms

Cognitive dysfunction
Dry mouth upon awakening
Morning headaches
Poor concentration
Sleepiness

treatment of illnesses such as OSA—is crucial.³

Clinical features of OSA

OSA is characterized by *hypopnea* (a decrease in breathing during sleep) or *apnea* (an actual pause in breathing). Pauses in breathing during sleep of at least 10 seconds, with obstruction of oronasal airflow despite continuous chest and abdominal movements, are referred to as *obstructive apneas*. These pauses are associated with a decrease in oxygen saturation or arousal from sleep, or both.¹

Primary features of OSA include sleep fragmentation accompanied by nocturnal hypoxemia and hypercapnia, with resulting excessive daytime sleepiness, mood problems, and poor neurocognitive performance (Table 1). OSA often causes potentially serious organ system dysfunction, including adverse cardiovascular and metabolic effects. Studies have suggested that executive dysfunction can be a feature of OSA, which is thought to be related to prefrontal lobe dysfunction caused by intermittent hypoxia. All of these conditions can contribute significantly to decreased quality of life.¹

The prevalence of OSA in the general population is approximately 20% when the condition is defined as an apnea-hypopnea index >5 events an hour. The index is the number of apnea and hypopnea episodes that occur during 1 hour of sleep.⁴

OSA and psychiatric illness

Psychiatric disorders often are comorbid with OSA. These include depression, anxiety, bipolar disorder, schizophrenia, post-

traumatic stress disorder (PTSD), panic disorder, and substance use disorder.

Depression. Several studies have documented that OSA and depressive disorder often are comorbid. Many symptoms are common to both, including fatigue, daytime sleepiness, poor concentration, irritability, and weight gain (Figure, page 62), although some core symptoms of depression (eg, sadness, anhedonia, guilt, and agitation) are clearly distinguishable from symptoms of OSA. The current recommendation is that a mood disorder should be considered secondary to OSA, and treated accordingly.⁵

Anxiety. OSA also has been linked to anxiety and nocturnal panic attacks. Frequent awakening due to choking from breathing cessation might play a role in the development of anxiety in patients with OSA, although the association is unproven. Studies have shown a correlation between anxiety disorders and excessive daytime sleepiness, one of the core symptoms of OSA.⁶ OSA is highly prevalent among combat veterans who have PTSD and complain of being overly vigilant at night; experiencing nightmares and frequent awakening; and having non-restorative sleep.⁷ Anecdotal reports suggest an association between OSA and bipolar disorder: namely, that continuous positive airway pressure (CPAP) treatment (see “How is OSA treated?” below) might switch depressed patients to mania.⁸

Schizophrenia. A strong association exists between OSA and schizophrenia. In a study,⁹ an OSA diagnosis was made 6 times more often in patients with schizophrenia than in patients with other psy-

chiatric illnesses. Obesity, male sex, and chronic antipsychotic administration were risk factors for OSA in patients with schizophrenia.⁹ OSA might be underdiagnosed in patients with schizophrenia because excessive daytime sleepiness, the most common daytime symptom of OSA, can be misattributed as a negative symptom of the disease or a side effect of pharmacotherapy.

OSA and medical illness

OSA can be comorbid with several medical conditions (Table 2). Sleep research in the past 15 years has demonstrated that chronic sleep deprivation has multiple untoward health consequences apart from excessive daytime sleepiness.¹⁰ Recent research suggests that chronic sleep loss (<7 hours a night), including sleep secondary to OSA, has wide-ranging effects on the cardiovascular, endocrine, immune, and nervous systems, including:

- obesity (adults and children)
- diabetes mellitus and impaired glucose tolerance
- cardiovascular disease and hypertension.

Obesity is one of the primary and more modifiable risk factors for OSA (Box). Studies suggest that reducing the severity of obesity would likely benefit people with a sleep disorder, and that treating sleep deprivation and sleep disorders might benefit persons with obesity.¹² Chronic sleep loss can have a deleterious influence on appetite regulation through effects on 2 hormones, leptin and ghrelin, that play a major role in appetite regulation. Chronic sleep loss causes and perpetuates obesity through its interplay with these, and other, hormones.¹²

Diabetes. The link between obesity and diabetes is well-established, as is the long-term morbidity and mortality of these 2 diseases.¹³ Evidence shows that OSA is associated with impaired glucose tolerance and an increased risk of diabetes.¹⁴

Cardiovascular disease. OSA has a strong association with cardiovascular disease,

Box

A word of explanation about obesity-OSA 'comorbidity'

Comorbidity is conceptualized in various ways in the medical literature. Several mechanisms can underlie the co-existence of multiple conditions in patients; these have been elucidated by Valderas and co-workers¹¹ and include *chance effect*, *selection bias*, and *causal association*. In turn, causal association comprises 4 types:

- direct causation
- associated risk factors (ie, risk factors for each disease can be correlated)
- heterogeneity (risk factors for each disease cannot be correlated but can cause either condition)
- independence (a third disease entity accounts for the co-existence of both conditions).

The comorbidity of obesity with other medical and psychiatric conditions is likely to result from all of these mechanisms. In some cases, the literature points towards the nature of causal association. In most cases the literature is inconclusive in regard to the exact nature of the obesity-obstructive sleep apnea causal relationship; only an association has been determined with any certainty.

Table 2

Common conditions associated with OSA

| |
|--|
| Obesity |
| Cardiovascular disorders (eg, congestive heart failure) |
| Craniofacial abnormalities (eg, retrognathia) |
| Anatomical abnormalities (eg, enlarged tonsils and adenoids) |
| Stroke |
| Acromegaly |

including systemic hypertension, possibly myocardial infarction, congestive heart failure, and stroke.¹⁵ Institution of appropriate treatment for OSA including CPAP can minimize or reverse many of these effects.¹⁶

Making an OSA diagnosis

A diagnostic polysomnogram (PSG), or sleep study, is the standard test when OSA is suspected. It is performed most often at an attended sleep laboratory. Typically, a PSG measures several physiologic measures, including, but not limited to:

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Obesity, male sex, and chronic antipsychotic administration are risk factors for OSA in patients with schizophrenia



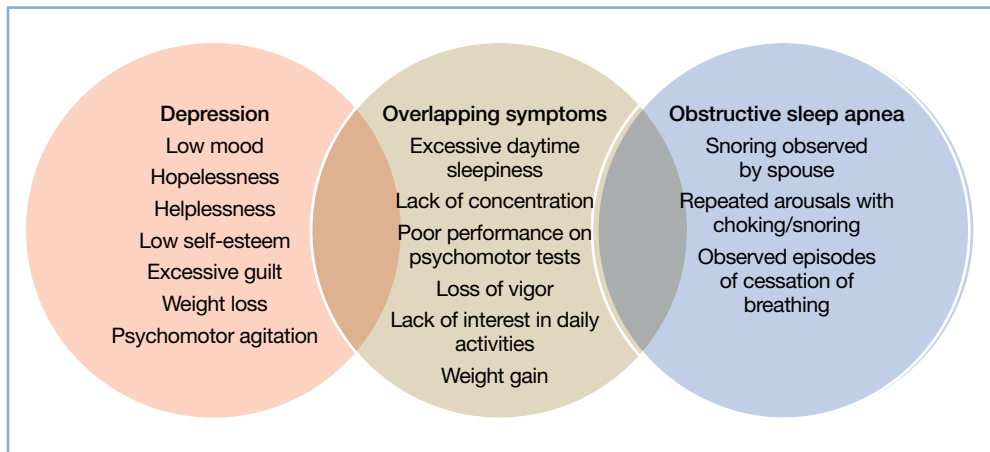
Obstructive sleep apnea

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Continuous positive airway pressure therapy is the gold standard for treating obstructive sleep apnea

Figure

OSA and depression: Where is the common ground?



- airflow through mouth and nose
- stages of sleep (by means of electroencephalography channels)
- thoracic and abdominal movements (to assess effort of breathing)
- muscle activity of the chin
- oxyhemoglobin saturation (to monitor variability in oxygen saturation [SaO₂] during OSA events).

Portable diagnostic instruments can provide reliable information when a patient cannot be studied in a laboratory. Assessments available on portable instruments include cardiopulmonary monitoring of respiration only; PSG; and peripheral arterial tonometry, which measures autonomic manifestations of respiratory obstructive events.^{17,18}

The severity of OSA is established by the apnea/hypopnea index, which measures the number of apneas and hypopneas per hour of sleep.

How is OSA treated?

CPAP is still the gold standard for treating OSA. CPAP provides a pneumatic splint for the upper airway by administering positive pressure through a nasal or oronasal mask. CPAP distinctly improves daytime sleepiness.^{19,20}

Pressure is determined initially by titration during PSG, although a number of automated CPAP machines are available in which pressure is adjusted based on the machine's response to airflow obstruction.

Advantages of using PSG to titrate CPAP are direct observation to control mask leak and the ability to observe the effects of body position and sleep stage and clearly distinguish periods of sleep from wakefulness.

Regrettably, adherence to a nightly regimen of CPAP is less than ideal for several reasons, including claustrophobia, interface failure, and other motivational variables. Some patients who experience claustrophobia can use desensitization techniques; others are, ultimately, unable to use the mask.

Oral appliances. A patient who has mild or moderate OSA but who cannot use the CPAP mask might be a good candidate for an oral appliance. These appliances, which hold the mandible in an advanced position during the night, can be effective in such cases.

CPAP autotitration changes the treatment pressure based on feedback from such patient measures as airflow and airway resistance. Autotitrating devices might have a role in beginning treatment in patients with OSA by means of a portable sleep study, in which CPAP titration is not performed. In addition, autotitrating offers the possibility of changing pressure over time—such as with changes in position during the night or over the longer term in response to weight loss or gain.

Surgery. In patients who are unable to use CPAP, surgery might be indicated to

relieve an anatomical obstruction, such as adenotonsillar hypertrophy or other type of mass lesion.

Sleep positioning. A patient who demonstrates OSA exclusively while sleeping supine might benefit from being trained to sleep on either side only or arranging pillows so that he can only sleep on his side.

In conclusion

OSA is common and easily treatable. It co-exists with, and exacerbates, medical and psychiatric illness. Treating OSA concomitantly with comorbid medical and psychiatric illness is essential to achieve full symptom remission and prevent associated long-term consequences of both medical and psychiatric illness.

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Related Resources

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Clinical Point

In patients who are unable to use CPAP, surgery might be indicated to relieve an anatomical obstruction

Bottom Line

Obstructive sleep apnea (OSA) and psychiatric illness, especially depression, often co-exist. Screen depressed patients—especially those with risk factors for OSA, such as obesity, smoking, and an upper-airway abnormality—for a sleep disorder. This is especially important if a patient complains of daytime somnolence, fatigue, cognitive problems, poor concentration, or weight gain. For optimal results, treat comorbid psychiatric illness and OSA concurrently; the same is true for other sleep disorders.