

Adult obstructive sleep apnea: Taking a patient-centered approach

Sleep apnea causes sleep deprivation and, over time, can lead to serious physiologic changes.

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LIKE MANY NURSES, you might frequently encounter patients with obstructive sleep apnea (OSA)—or signs and symptoms of this chronic condition. You can play a pivotal role in helping them if you recognize the hallmarks of OSA and are familiar with its treatment and follow-up.

Too often, OSA goes undiagnosed. Adults with OSA are sleep deprived and subjected to multiple physiologic insults every hour they sleep. As a group, they're commonly overlooked—partly due to lack of education about the condition. Aftercare support of OSA patients, particularly when it comes to education, is fragmented, disorganized, and nonstandardized.

This article gives an overview of OSA, describes barriers to initial patient acceptance of and adherence to therapy, explores current approaches to follow-up education and training, and discusses potential solutions based on adult learning theories and learning options.

Incidence, risk factors, and consequences

OSA affects twice as many men as women until menopause, when the gender disparity closes. It becomes more common with age and is more prevalent in African-Americans, Native Americans, and Asians. Anatomic risk factors include a very small or receding jaw, a high arched palate and tonsillar hypertrophy, and increased neck circumference. Obesity, smoking, and alcohol use are modifiable risk factors. OSA pathophysiology is

complex and includes upper-airway closure and abnormalities in upper-airway neuromodulation (the mechanism that contributes to upper-airway patency).

Long-term sequelae of OSA include hypertension, stroke, neurocognitive deficits, mood disturbances, and hormonal changes, such as increased ghrelin and decreased leptin levels (which can lead to weight gain). OSA adversely affects other medical conditions, such as diabetes, pulmonary disease, and cardiovascular disease. Conversely, such medical conditions as obesity and neurologic disorders can contribute to worsening OSA. In addition, OSA may increase the risk of motor-vehicle accidents, reduce workplace productivity, and disrupt bed-partner relationships.



Classifying OSA

Obstructive sleep apnea (OSA) is classified using the apnea hypopnea index, which reflects the number of events per hour of sleep. Here are the three classifications.

- Mild: 5 to 15 events/hour
- Moderate: 15 to 30 events/hour
- Severe: more than 30 events/hour

Assessment and diagnosis

Clinical features of OSA include loud cyclical snoring with apneic pauses of at least 10 seconds, as well as excessive daytime somnolence. OSA typically is suspected from clinical presentation, patient history, and, as appropriate, bed-partner reporting.

An in-laboratory polysomnogram or a home sleep study is done to confirm OSA and determine its severity. In patients with OSA, these studies typically reveal apnea, hypopnea, or both, resulting in repeated oxygen desaturations, brief cortical arousals from sleep, and transient sympathetic nervous system (SNS) activation. SNS activation, in turn, causes brief increases in heart rate and blood pressure. (See *Classifying OSA*.)

Because OSA can lead to neurocognitive deficits (especially in executive functioning), it can affect the patient's ability to adapt to therapy. Executive functioning influences the ability to plan, execute goal-directed behavior, respond adaptively to new experiences, and draw from previous experiences. Deficient neurocognitive function may limit the patient's ability to learn about OSA and its treatment and to carry out self-directed care at home.

Intervention

The goal of therapy is to improve or mitigate long-term consequences of OSA. Positive airway pressure (PAP)—the therapy of choice for OSA—is highly effective when used consistently over the course of the night for most nights. By maintain-

ing a patent airway, PAP reduces apnea, desaturations, SNS arousal, and cortical sleep arousals.

PAP provides a pneumatic splint to the upper airway, maintaining an open airway. It can provide several modes of pressure delivery, including:

- fixed (continuous) positive-airway pressure (CPAP)
- autotitration, in which pressure adjusts automatically to upper-airway changes
- bilevel therapy, which delivers a fixed inspiratory pressure and fixed differential expiratory pressures.

Although PAP is highly effective, patients may have difficulty adapting and adhering to therapy. It can be inconvenient, the patient must learn how to use the equipment, and it may cause nasal stuffiness and claustrophobia. Some patients feel embarrassed to wear the mask. Other possible barriers to PAP therapy include lack of appropriate support and training and the need for reevaluation to ensure the patient is adhering to therapy. (See *CPAP with patient interface*.)

Patient education

Learning to sleep with a PAP mask on and adapting to the constant flow of blowing air can be daunting. Patients must learn how to use the device, apply the mask, and keep it in place throughout the night. Also, most PAP devices have numerous software settings and buttons, which patients must learn to work in an effort to improve comfort and use.

Theoretically, the goal of education for patients with OSA has been to increase PAP adherence, which is calculated from the number of nights the patient uses PAP and nightly hours of use. Education and training techniques vary from center to center, and guidelines are lacking. Data show adherence rates of 30% and 80%, which aren't sufficient to eliminate long-term effects of OSA and suggest that current



CPAP with patient interface

Today's positive-airway pressure (PAP) equipment is smaller and quieter than previous versions and has many new comfort features. Patients should update their PAP equipment every 5 years and replace the mask frequently. Insurance companies typically reimburse for equipment costs. The photo above shows the Ikon+™ continuous PAP (CPAP) device from Fisher & Paykel Healthcare.

Photo courtesy of Fisher & Paykel Healthcare Corporation Limited

methods of follow-up care (including education, training, and ongoing assessment) aren't working.

A fragmented approach

The current approach to OSA patient education is fragmented. While general standards exist, there's little agreement on which techniques yield the best results. A common approach is to have patients watch a video before a sleep study and give them written material about OSA on their first visit to the clinic. The sleep specialist or respiratory therapist reviews the condition with the patient before or after the sleep study.

For the sleep study, a titration method is used to obtain the optimum PAP pressure required to eliminate apnea, hypopnea, arousals, and oxygen desaturation. Before this study, the technologist demonstrates to the patient how to use the equipment, places a mask on the patient's face, and has an informal discussion about OSA. After confirming optimal pressure, the sleep specialist formulates a prescription and sends it to a durable medical equipment (DME) provider for setup and training. The patient goes home to provide self-care and may or may not return to the sleep center.

Although DME providers often

have the burden of care, few standards or consistent methods exist for providing patient information, conducting training, and providing follow-up care. Due largely to this lack of consistency, clinical outcomes vary greatly.

Traditionally, many sleep clinics have relied heavily on DME companies to provide most of the education and PAP training to patients. But in some cases, these companies aren't reimbursed for this task, which limits follow-up opportunities for patient learning. Although the American Academy of Sleep Medicine provides clinical guidelines for care of OSA patients and recently outlined a process for DME accreditation standards, little information on patient education is included. Nested within the guideline is a one-paragraph statement on patient education, which describes topics to discuss (results, risks, and therapy) and notes that a multidisciplinary approach should be adopted. Although the guideline states that brochures, videos, handouts, and websites can be used to provide this education, it doesn't elaborate further.

In one study, researchers reported differences in the perceived informational needs of CPAP users and clinical staff; study results showed a mismatch between what healthcare professionals believe patients need to know and what patients believe they need to know to use this therapy successfully.

Education is crucial to patients' adherence to OSA therapy. But a more robust initial teaching plan is needed, along with concentrated follow-up of the patient's knowledge, self-efficacy, and ability for self-care.

New patient education models

OSA education should use an interdisciplinary approach. Although few nurses work in sleep centers, many nurses, regardless of their specialty, can be instrumental in ensuring that patients diagnosed with OSA under-

Using the Epworth Sleepiness Scale

stand the condition and have confidence in their ability to use the therapy. Nurses working in a home-care environment are in a unique position, because PAP devices typically are located at the bedside. This provides an opportunity to examine the PAP device and mask and to discuss PAP use and good sleep hygiene. The nurse also should ensure that the patient understands how to clean the PAP machine properly. In an acute-care facility, the nurse should ask the patient about signs and symptoms related to OSA and provide appropriate referrals, if needed.

For hospital patients, the nurse should encourage PAP use during the hospital stay and provide education about the serious health risks of OSA and adequate adherence to PAP therapy. Respiratory therapists may be good adjunct educators in this regard.

Be aware that sleep-deprived patients may be unable to retain information unless they've had some treatment. This presents a quandary and requires assessment of the patient, current standards for learning, individual planning to optimize outcomes, implementation, and outcome measurement. Caregivers who understand barriers to learning in OSA patients and apply adult learning theories can better serve these patients.

Research indicates the need for new patient-education models for OSA—models based on varying learning techniques to help patients understand the condition and adapt to therapy. Not only do patients need to understand OSA, but they also must be trained in the skills required to use PAP and associated therapies. Healthcare educators need to elicit the patient's beliefs when assessing learning needs, because the patient's opinion of what he or she needs to learn may differ from the provider's.

Teaching methods for OSA patients include face-to-face sessions with the provider, group education, viewing a video with a "learning sheet" on which the patient can

Healthcare providers can use the Epworth Sleepiness Scale to determine the level of a patient's daytime sleepiness. It asks patients how likely they are to doze off or fall asleep (not just feel tired) in the situations below, based on the recent past. (If they haven't been in these situations recently, instruct them to think about how they would have reacted in the past.) Patients rate the eight questions below from 0 to 3, as follows:

- 0 = would never doze or sleep
- 1 = slight chance of dozing or sleeping
- 2 = moderate chance of dozing or sleeping
- 3 = high chance of dozing or sleeping.

Situation	Chance of dozing or sleeping (0 to 3)
Sitting and reading	_____
Watching TV	_____
Sitting inactive in a public place (such as a theater or meeting)	_____
As a passenger in a motor vehicle for an hour without a break	_____
Lying down in the afternoon	_____
Sitting and talking to someone	_____
Sitting quietly after lunch (no alcohol)	_____
Stopped for a few minutes in traffic while driving	_____
Total score	_____

write down key learning points, and hands-on experience with the PAP machine. Additional techniques that have proven to be helpful include motivational interviewing and the teach-back method.

Assessing effectiveness of interventions

Objective measures are available to assess whether OSA interventions are working. You can obtain measures of adherence and effective therapy by downloading data from the PAP device. These measures include mask leak, time on therapy (usage), and effectiveness of therapy based on numbers of residual apnea and hypopnea events. Also useful are subjective measures of daytime sleepiness using such tools as the Epworth Sleepiness Scale (ESS). While not specific to OSA, the ESS is a validated, self-administered tool that assesses daytime sleepiness. It

asks questions that measure a patient's level of daytime sleepiness. For each question, the patient indicates the likelihood that he or she would fall asleep in a particular situation. The higher the score, the sleepier the patient. A total score below 10 is considered normal; a score of 24 indicates severe sleepiness. You can use this objective and subjective information to assess treatment compliance and efficacy, track patient progress, and evaluate learning outcomes in OSA patients. (See *Using the Epworth Sleepiness Scale*.)

An opportunity to better your patients' lives

As a nurse, you need to understand the current model of care and education for OSA patients and important nursing implications. You're in an optimal position to identify signs and symptoms in patients who haven't been evaluated and diagnosed.

You need to understand the current model of care and education for OSA patients.

With patients already diagnosed with OSA, don't assume they've received adequate training. Remember that they have a chronic illness and may require multiple learning opportunities and interventions. By using a multidisciplinary approach, you have a valuable opportunity to affect the lives of millions by identifying at-risk patients, evaluating learning needs, promoting patient-centered educational opportunities, and promoting optimal patient outcomes. ★

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