

# The Changing Face of the OSA Patient

*Recognizing obstructive sleep apnea and cardiovascular disease in minorities.*

By Michael C. Lu, MBA/HCM; Cheryl Rambaud, RRT, RPSGT; and Charles Noble, MD

**T**he face of America is changing. In a wonderfully cornucopian manner, the United States has become more cosmopolitan than ever. Over the past 100 years, minorities have changed the face of America. In 1900, nonwhite minorities made up less than 10% of the census. Today, it is estimated by the US Bureau of Labor Statistics that they make up 34% of the population.

Ten years ago, the patient who walked into a sleep lab was

fairly predictable—he was male, overweight, and a heavy snorer. Increased research, publicity associated with various sleep-disordered breathing (SDB) morbidities and mortality (like the

death of football star Reggie White), and the plurality of SDB affecting all ages, demographics, and populations, regardless of ethnicity and genetic predisposition, have drastically changed sleep medicine.

Due to increased basic and applied research and better physician and patient education, the expectations of today's OSA patients are broader than in the past. Samples of what

we see today in the sleep lab include:

- Middle-aged diabetics with systemic hypertension;
- Normotensive college students who are insomniacs;
- Postmenopausal women with healthy lifestyles;
- Stroke and epileptic patients with vascular disease;
- Overactive adolescents participating in sports till late at night; and
- Neurologically stimulated people with TVs in their bedrooms and bad sleep hygiene.

Of particular importance over the last 5 years is the increase in cohort and epidemiological studies that examine population trends within minorities.

Until recently, data on sleep behaviors of minorities was simply not available. As more data becomes available, it is imperative that sleep professionals comprehend epidemiological trends of cardiovascular disease (CVD) and obstructive sleep apnea (OSA) in minorities. Doing so will help the sleep diagnostic community become greater advocates for better screening and management of disease among minority patients in the lab.

## EPIDEMIOLOGICAL TRENDS: CARDIOVASCULAR DISEASE IN MINORITIES

The American Heart Association recently published its "2007 Heart Facts," indicating that upward of 80 million Americans have some form of cardiovascular disease. Here is

 More information available with the online version:  
• Cardiovascular screening for sleep techs.  
• Sample cardiovascular questionnaire for the sleep lab.   
[www.sleepreviewmag.com](http://www.sleepreviewmag.com)

a breakdown of some of those statistics as they relate to minority populations:

- Among African Americans, 44.6% of men and 49% of women have CVD.
- Among Mexican Americans, 31.6% of men and 34.4% of women have CVD.
- Nearly 45% of black adults have hypertension.
- CVD ranks as the number one killer of African Americans.

The disturbing trend is that within the majority of the population within America, access to high-quality health care is often limited for minorities. The reason for this is multifaceted. Ranganathan claims that ethnic minorities are often poorer, less educated, and more frequently unemployed than their white counterparts.<sup>1</sup>

### EPIDEMIOLOGICAL TRENDS: SDB IN MINORITIES

Several studies have reported racial group differences in the symptom manifestation, somatic complaints, and overall health problems of minorities in comparison to Caucasians.<sup>2</sup> It is noteworthy that race/ethnicity is associated with OSA independently of age, sex, and body mass index, three of the main risk factors for OSA.<sup>3</sup>

Among minority OSA patients, Asian and African American communities are of particular concern. A study conducted by Dr Kian Chun Ong and colleagues at Stanford University's Sleep Disorders Clinic found that Asians have more severe OSA than Caucasians.<sup>4</sup> The researchers compared 105 Asian patients with SDB to 99 Caucasians who also were diagnosed with the disorder. The patients were matched for age, gender, and body mass index. Outcome measurements included questionnaire-based symptom scores, respiratory disturbance index, and minimum oxygen saturation during sleep. The researchers found that a greater number of the Asians had severe OSA. According to the team's analysis, race was associated with this difference independent of age, sex, or body mass index, and minimum oxygen saturation during sleep. The estimated odds ratio for Asians having severe OSA was two and one-half times greater than Caucasians.

In another study that examined African Americans, researchers concluded that African Americans are more likely to have OSA than Caucasians.<sup>5</sup> The study also

revealed that among African American relationships, partners are more likely to tolerate the irregular breathing and snoring that accompany the disorder; consequently, African Americans fail to seek treatment for this disorder, which can lead to more serious health problems.

It also should be noted that OSA in the minority community should not be seen as simply an adult or geriatric disease. Perhaps the most understudied and neglected subgroup is the pediatric community. A study of 198 African American children illustrated that children with SDB had increased EEG arousals; sleep architecture was not otherwise significantly different from the non-SDB group.<sup>6</sup> According to the study, African American children with SDB had significantly greater oxygen desaturation with obstructive events compared to Caucasian and Latino children.

### OSA AND CARDIOVASCULAR DISEASE

A growing body of evidence continues to illustrate the direct relationship that obstructive sleep apnea has with cardiovascular disease (Figure 1). The

relationship between OSA and cardiovascular disease has been shown to be bi-directional, each as both a comorbidity and a causality of proliferation of the other. It is well known that OSA causes secondary hypertension<sup>7</sup> and decreased vascular functionality. Patients with OSA experience repetitive hemodynamic oscillations during the night that differ from those seen in normal sleep.<sup>8</sup> Certain changes in systemic arterial blood pressure, pulmonary arterial blood pressure, heart rate, and cardiac function occur in association with alterations in sleep state and in respiration.

Polysomnographic recordings with concomitant monitoring of cardiocirculatory parameters have demonstrated that obstructive apneas arising during sleep are accompanied by a marked increase in pulmonary and systemic arterial pressure and severe alveolar hypoventilation. Apneas also may give rise to cardiac arrhythmias, namely potentially life-threatening bradyarrhythmias.<sup>9</sup> The long-term repercussions of these nocturnal cardiocirculatory changes on subsequent cardiovascular

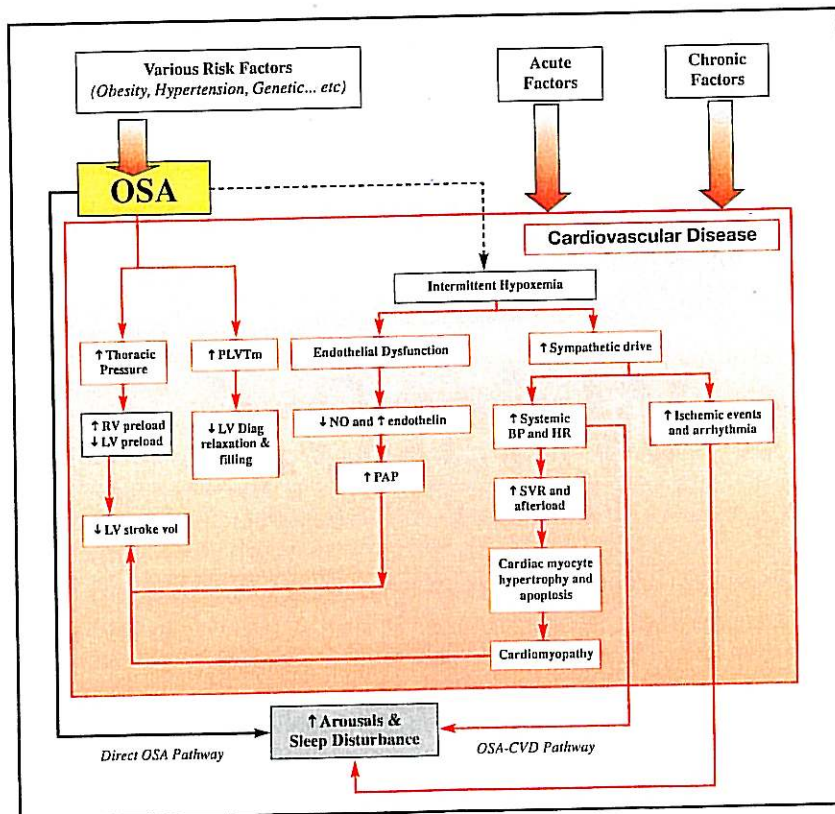


Figure 1. Postulated cardiovascular effects from OSA and hypoxemia on sleep. RV = right ventricle; LV = left ventricle; PLVTm = left ventricular transmural pressure; NO = nitric oxide; BP = blood pressure; HR = heart rate; SVR = systemic vascular resistance.

diseases and the patient's life expectancy are more controversial. However, there is little doubt that patients with obstructive sleep apnea syndrome have systemic arterial hypertension, ischemic heart disease, transient ischemic attacks, or stroke more often than control populations and have a shorter life expectancy.

#### SCREENING IN THE SLEEP LAB

With the increased recognition of minority OSA patients and the identified risk of CVD in minority populations, it is time for sleep labs to get up to speed in screening for CVD in at-risk populations. Many labs receive nothing more than an insurance card and prescription form from the referring physician's offices. On a lucky day, some receive a history and physical exam findings and possibly a list of medications.

As sleep professionals, we are grounded in the notion that "raw data" is important. However, adequate screening, questioning, and data acquisition secondary to EEG/EMG/EOG data are also impor-

tant in generating high-quality data to our colleagues who are ordering the sleep studies. A "yes or no" question may not be a waveform, but it is just as vital in delivering adequate information, especially since internists, primary care physicians, and cardiologists are ordering more and more sleep studies every year.

From a training perspective, medical directors, technical directors, and RPSGTs need to be more proactive in teaching ECG interpretation to sleep technologists (Table 1, available with the online version). From an operations perspective, additional screening questions need to be utilized to address the fact that sleep patients often arrive in the sleep lab with an array of cardiovascular problems (Table 2, available with the online version). Because of difficulty receiving diagnostic and clinical data from referring physicians, some sleep labs are doing Bio-Z Impedance cardiography screening on patients who meet various parameters.

Sleep labs must really start pushing referring physicians to send histories,

physical exam results, and other diagnostics detailing and related to cardiovascular care. The more information that is received by scorers and medical directors, the better sleep medicine professionals are able to create an extensive interpretation report illustrating what is "truly going on" with the patient.

The face of the sleep medicine patient is changing. We must change to meet it—even if that means changing the way we do screening, intake, and physician education. **SR**

*Michael C. Lu, MBA/HCM, is senior clinical operations analyst, OSHA officer, and training-team member for Sleep Development Group, Southlake, Tex. Cheryl Rambaud, RRT, RPSGT, is clinical coordinator at Sleep Development Group, and Charles Noble, MD, is a cardiologist at Capital City Cardiology, Columbus, Ohio. The authors can be reached at [sleepeditor@ascendmedia.com](mailto:sleepeditor@ascendmedia.com).*

References are available with the online version at [www.sleepreviewmag.com](http://www.sleepreviewmag.com).

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