



**ORIGINAL RESEARCH PAPER**

**Medicine**

**Obstructive Sleep Apnea**

**KEY WORDS:**

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Lack of sleep has significant impact on health and well-being.

- Diminished cognitive performance and vigilance
- Weight gain
- Insulin resistance (diabetes)
- Increased incident heart attacks
- Decreased immune function
- Decreased longevity

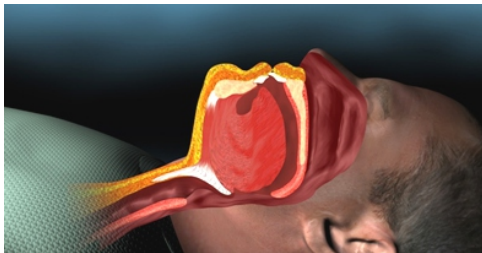
Sleep Curtailment in Healthy Young Men is Associated with Decreased Leptin Levels, Elevated Ghrelin Levels, and Increased Hunger and Appetite.

**Major Categories of Sleep Disorders-**

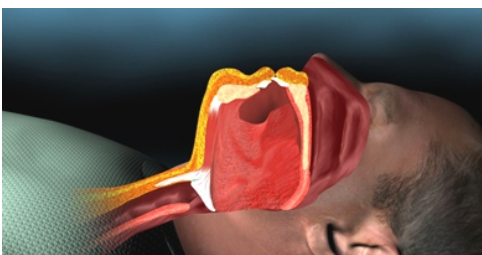
- Disorders that make you sleepy
- Sleep Disordered Breathing
- Narcolepsy
- Sleep Deprivation
- Circadian Rhythm Disorders
- Disorders impairing ability to sleep - Insomnia
- Parasomnias - Sleep Walking & Talking
- OSA is the most prevalent of sleep-related disorders

OSA occurs when the upper airway repeatedly collapses during sleep, causing cessation of breathing (apnea) or inadequate breathing (hypopnea) and sleep fragmentation

**Open Airway**



**Closed Airway**



Potential health consequences of untreated OSA

- Short-Term
- Automotive accidents
- Excessive sleepiness
- Decreased quality of life
- Neurocognitive & performance deficits
- Long-Term
- Hypertension
- Heart disease
- Heart attack

- Arrhythmias
- Stroke

Impaired glucose tolerance

**The link between OSA and hypertension-**

> 40% of patients presenting with OSA have daytime hypertension<sup>1</sup>  
 30 to 50% of patients with hypertension have OSA<sup>2</sup>  
 Even mild OSA is a risk factor for hypertension<sup>3,6</sup>  
 Patients with untreated OSA may be resistant to their anti-hypertensive medications<sup>4</sup>  
 Even small decreases in blood pressure may help to decrease the risk of heart attack and stroke<sup>5</sup>

**The link between OSA and heart failure-**

- Congestive Heart Failure (CHF) affects 1.5-2% of population
- Annual direct cost estimated \$20-40 billion
- There is high prevalence of sleep-disordered breathing in CHF patients (~40-50%)<sup>7</sup>

Many of mechanisms in OSA may play a role in patients with heart failure<sup>8</sup>,

**The link between OSA and atrial fibrillation-**

- OSA is commonly seen in patients with Atrial Fibrillation<sup>1</sup>
- Patients with untreated OSA have a higher recurrence of Atrial Fibrillation after cardioversion than patients without a polysomnographic diagnosis of sleep apnea
- Appropriate treatment with continuous positive airway pressure (CPAP) in OSA patients is associated with lower recurrence of AF
- 82% recurrence in untreated OSA
- 42% recurrence in treated OSA with CPAP2

**The link between OSA and diabetes-**

- Diabetes affects nearly 21 million Americans (7% of population)
- Diabetes - 6th leading cause of death in US
- 2/3 of people with diabetes die from a heart attack or stroke1

Effective treatment of SDB led to improved glycemic control in subjects with Type II diabetes

**The link between OSA and anesthesia-**

OSA patients may be at risk of complications related to anesthesia due to-

- Significant co-morbidities<sup>1,2</sup>
- Susceptible to airway collapse & sleep deprivation<sup>1</sup>
- OSA can effect all phases of perioperative period<sup>1,2,3</sup>
- Anesthesiologists' role in identification of OSA

**The link between OSA and bariatric surgery-**

- Clinically severe obesity
- BMI > 40kg/m2 or BMI 35-40 kg/m2 with co-morbid conditions
- Obesity well known risk factor for OSA1 71% of patients evaluated for bariatric surgery identified as having OSA1

**Diagnosis of Sleep Apnea-**

- Physical exam and history
- Asking questions about sleep or symptoms that may occur during the day, indicating a problem
- with sleep
- Diagnosed by having a polysomnogram or sleep study performed during the patient's normal sleep time

**Patients to consider for OSA screening-**

- Complain of fatigue or unrefreshing sleep
- BMI
- Hypertension/CHF with nocturnal angina or Cardiovascular Disease
- Bariatric patients
- Patients with large necks
- 17 in for men, 16 in for women
- Patients with small jaws
- Patients with metabolic syndromes such as diabetes
- 

**Methods of screening for OSA-**

- Berlin Questionnaire – OSA specific
- Simple and self-administered
- Snoring
- Sleepiness
- History of obesity and hypertension
- Epworth Sleepiness Scale
- 8 questions answered on a scale of 0 – 3
- 0 = would never doze
- 3 = high chance of dozing
- Score > 9 represents daytime sleepiness

**The Berlin Questionnaire-**

- Simple, self-administered patient questionnaire
- Asks patients to report their symptoms
- Questionnaire is specific to OSA
- Identifies patients at high risk for OSA who are likely to benefit from diagnosis

**sleep study-**

- Polysomnography - a painless study done in lab setting to monitor patient's sleep patterns
- During sleep, the study may record:
  - Brain wave activity
  - Respiratory pattern
  - Heart rate
  - Chest movement
  - Leg movement
  - Eye movement

**References-**

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