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## AN OVERVIEW ON - SLEEP APNEA

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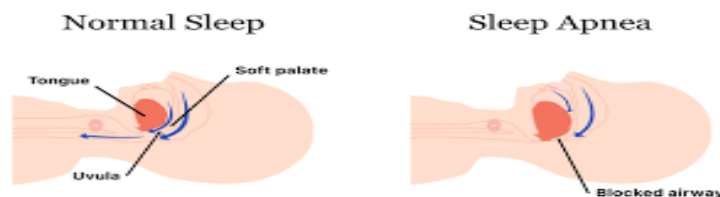
### Abstract:

During obstructive sleep apnea (OSA), the upper airway repeatedly collapses while the patient is asleep, leading to oxygen desaturation and disrupted breathing. Awakenings with or without oxygen desaturation occur in conjunction with airway obstructions and collapses during sleep. OSA is a widespread condition, particularly in those with underlying medical conditions and established risk factors. The cause of the condition is not always clear-cut, although risk factors include irregular breathing patterns, low chest volume, and upper airway dilator muscle dysfunction. The menstrual cycle disruption, aging, adenotonsillar hypertrophy, smoking, male sex, being overweight, and preserving liquids are among the high-risk variables. Sleepiness, apnea, and snoring are the symptoms. Known risk factors for OSA include obesity, male gender, age 65 and above, smoking, alcohol usage, and family history.

**Index Terms** - Obstructive sleep apnea, sleep, Diagnosis, Polysomnography, risk factors, treatment, pathophysiology.

### I. INTRODUCTION:

Recurrent episodes of partial and total airway obstruction during sleep, along with repeated apnea and hypopneas, are the hallmark of obstructive sleep apnea, or SA <sup>1</sup>. Over 936 million persons worldwide, both men and women, between the ages of 30 and 69, are thought to have mild to severe OSA, which puts healthcare practitioners and the healthy delivery system at risk globally <sup>3</sup>.



**FIG:1 NORMAL SLEEP Vs SLEEP APNEA**

## **TYPES OF SLEEP APNEAS:**

There are multiple types of sleep apnea:

1. Central sleep apnea
2. Apnea obstructed sleep
3. Mixed cases of sleep apnea<sup>2</sup>

Anyone might be affected by the risk factors for obstructive sleep apnea (OSA).

Nonetheless, a number of circumstances raise the possibility of having this sleeping condition.

## **RISK FACTORS:**

### **NON- MODIFIABLE RISK FACTORS**

1. Being overweight
2. Blockage of the nasal passages
3. Gender
4. Anatomy of the Craniofacial
5. Cigarette

### **MODIFIABLE RISK FACTORS**

1. Obesity
2. Muscle relaxant drugs
3. Endocrine conditions
4. Smoking
5. Nasal congestion & Alcoholism

## **INDICATIONS AND MANIFESTATIONS:**

Symptoms and indications of the night include salivating, xerostomia, sleep disturbance with apnea observed. Gasping or choking during diaphoresis. Daytime indications and symptoms include extreme drowsiness, xerostomia, headaches in the morning, sleep that isn't restorative, disorders of gastric reflux, impairing focus, depression and impotence, headache in the morning, sleeplessness, excessive sleep, impairments in attention, breathing heavily during sleeping, loud snoring, and irritation, frequent signs of apnea while sleep, fat, alcohol consumption around the neck, cigarette use, congestion in the nose, gender [more so in men], age[exceeds with aging] anatomical elements, genetics and family history<sup>3</sup>.

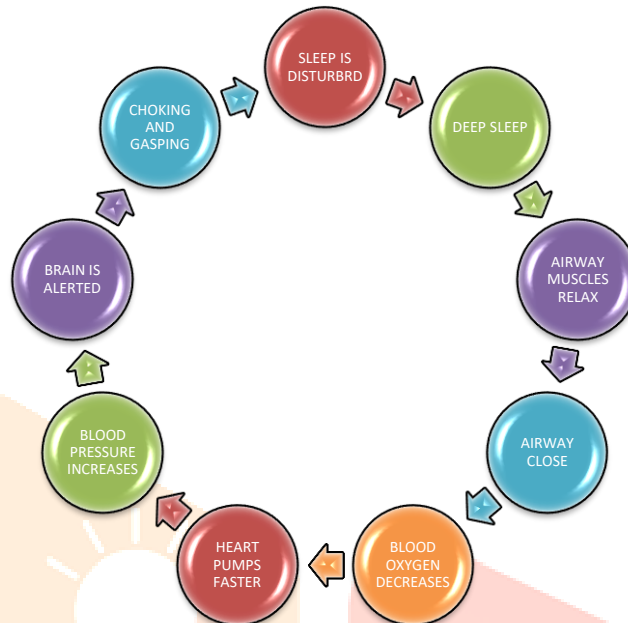
## **DIAGNOSIS:**

### **MEDICAL DIAGNOSIS:**

Polysomnography is a comprehensive sleep study conducted in a laboratory that evaluates the frequency of breathing obstructions, apnea, and hypopneas during sleep. a polysomnographic 5-minute track of OSA events. Due to the length of the lung-to-finger circulation, the absence of airflow is accompanied by paradoxical breathing, or the chest and abdomen moving out of phase, and a decrease in oxygen saturation; the nadir oxygen saturation is delayed in relation to the apnea. To differentiate it from narcolepsy, the multiple-sleep latency test (MSLT) is performed to measure how quickly the patient falls asleep. The eight-item Epworth Sleepiness Scale measures a person's tendency to nod off while engaging in daily activities. The Mallampati score (grades 1-4) is a useful tool for predicting sleep apnea, especially when airway blockage appears to be caused by an enlarged tongue. A lateral cephalometric radiograph can show the airway column's diversion, the location of the hyoid bone, and any defects in the maxillomandibular region of the craniofacial skeleton. Dynamic, optic nasopharyngoscopy; to investigate the airway's three-dimensional anatomy and identify any anatomical obstruction site.

**DENTAL DIAGNOSIS:**

Using 3D reconstructed models from computed tomography [CT] data, a dentist is also the first healthcare provider to identify a patient with a sleep disorder, excess fat accumulation in the palate, tongue, and throat, micrognathia, macroglossia, and decreased functional space because the soft palate is extended. This is because elevated tongue volume with BMI affects the posterior airway, which is likely to contribute to the improvement of SA.

**PATHOPHYSIOLOGY:**

*Fig:1 Sleep apnea -this can happen 10 to 300 times a night*

**VARIOUS TREATMENTS FOR SLEEP APNEA:****CONTINUOUS POSITIVE AIRWAY PRESSURE TREATMENT (CPAP):**

CPAP is the primary line of treatment for people with mild-to-severe OSA. "CPAP" prevents the airways from collapsing, which is the physiological description of the condition, by introducing a column of air. It has been demonstrated that the CPAP mechanism prevents snoring while you sleep. Consequently, it is believed that CPAP enhances quality of life by lowering symptoms of OSA, including daytime drowsiness, nocturnal awakenings, and gasping during sleep.

**ORAL APPLIANCES:**

Oral appliances have gained popularity as a helpful substitute therapy for SA. Tightened to the upper and lower dental arches are two dental splints known as OA. Its purpose is to maintain the tongue and lower jaw in an anterior position so as to increase the upper airway volume in the lateral dimension of the velopharyngeal region. As a result, there will be fewer instances of hypoxia and nocturnal apnea while you sleep. Compared to CPAP, OA is more tolerable.

**POSITIONAL THERAPY:**

The human body's anatomical and physiological mechanisms mean that an OSA patient's position during sleep has a significant impact on the intensity of their snoring and other obstructive episodes. Patients who sleep in a supine position are more likely to experience apnea and hypopnea episodes because of the pressure of gravity. This method involves placing tiny pillows on the backs of patients to prevent them from sleeping in a supine position while also mildly alleviating OSA symptoms.

**NASAL SURGERIES:**

While nasal operations may not cure OSA, they do help patients breathe through their noses more comfortably and adhere to CPAP instructions. To establish an unobstructed nose and airway stability, the most common nasal procedures are septoplasty, turbinectomy, and polypectomy. These operations entail straightening the septum and shrinking the turbinate.

**UVULOPALATOPHARYNGOPLASTY:**

The most popular treatment for adult as is UPPP. To open up the airway, it involves removing any extra tissue that is obstructing the tonsils, pharynx, soft palate, and uvula. The following side effects are possible after this procedure: discomfort, bleeding, edema, infection, altered food flavour, and dysphagia. As a benefit, it also lessens patients' CPAP compliance and might stop snoring.

**MAXILLO MANDIBULAR ADVANCEMENT:**

Jaw surgery, or maxillomandibular advancement, is considered the most effective procedure for treating OSA. This technique involves stretching the tongue away from the throat and pushing the jaw and maxilla forward by up to 10 to 12 mm, which widens the upper airway overall and lessens pharyngeal obstruction.

**PREVENTIONS:**

Certain lifestyle choices, like as losing weight, exercising, and lowering alcohol and tobacco use, especially before bed, can significantly reduce and avoid the severity of OSA. These choices also increase oxygen consumption.

**CONCLUSION:**

Studies on sleep apnea over the past few decades have identified a number of risk factors, symptoms that are connected with it, successful diagnosis methods, and ineffective treatment alternatives. Obesity and the aging population will contribute to an increase in OSA incidence worldwide in the near future. However, continuous positive airway pressure and weight loss have demonstrated encouraging results in lowering OSA episodes. Despite advancements over time, a sizable patient population remains undiagnosed, leading to rising rates of morbidity and mortality associated with sleep apnea.

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