



# Obstructive sleep apnoea in adults

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In our modern fast paced world, non-restorative sleep has become a common phenomenon. The International Classification of Sleep Disorders – Third edition (ICSD-3) includes a category called Sleep Related Breathing Disorders (also known as sleep disordered breathing). Sleep loss from undiagnosed, and consequently untreated sleep related breathing disorders, can adversely affect health and well-being.

**S**leep related breathing disorders are disorders that adversely affect a patient's breathing while they are asleep. They are characterized by disruptions of normal breathing patterns that only occur during sleep. The most common sleep related breathing disorders are snoring and sleep apnoea. Obstructive sleep apnoea (OSA) is by far the most common form of sleep apnoea. This review focuses on OSA in adults. Whilst OSA affects about 2 to 5 percent of children, infants and teenagers, these groups are beyond the scope of this review.

Practice nurses can help facilitate a diagnosis of OSA by recognizing OSA signs, symptoms, and risk factors, and informing the patient's GP if OSA is suspected.

## Snoring and sleep apnoea

Snoring is a common problem for many adults. It's estimated that half of all adults snore at least occasionally and that 25 percent are habitual snorers. Snoring is a coarse sound made by vibrations of the soft palate and other tissue in the upper airway. It occurs when part of the throat air passage collapses and vibrates. When someone is asleep, the muscle tone in the tongue, soft palate and neighbouring structures decreases. This allows collapse and vibration of these structures when breathing, thereby causing snoring. Anything that obstructs the upper airway can contribute to snoring e.g. large adenoids or a large tongue. Light or occasional snoring is not a health threat if it doesn't interrupt breathing.

It's estimated that 30-50% of snorers actually suffer from sleep apnoea. Sleep apnoea occurs when a person's normal breathing pattern is interrupted during sleep. The person temporarily stops breathing while they are sleeping. The gaps in breathing are called apnoeas. The word apnoea means absence of breath. Sleep apnoea sufferers stop breathing repeatedly as they sleep. Their breathing may stop anything from about 10 to over 100 times per hour of sleep and may not start again for up to a minute or more. The pauses in breathing become clinically significant if the cessation lasts for more than 10 seconds each time and occur more than 10 times every hour. In 'primary snoring' there are no episodes of apnoea or hypoventilation.

## Obstructive sleep apnoea

OSA is the most common form of sleep related breathing disorder and is estimated to account for over 80% of cases. It is defined as the cessation of airflow (caused by an obstruction) during sleep, preventing air from entering the lungs. Eventually, the consequent loss of breath causes the nervous system to send an alarm signal to the brain resulting in the person arousing momentarily. This comes about as a result of the increase in carbon dioxide which causes the sympathetic nervous system to release stress hormones.

This reactivates the muscles that hold the throat open, the person breathes again and falls back to sleep. Typically there is a gasp or snort and their body shudders as they arouse. Usually the sufferer is totally unaware that they were momentarily jolted awake. The apnoeas prevent the sufferer from entering or spending adequate time in the deep restorative sleep stage. They also deprive the sufferer's tissues and organs of oxygen.

It's estimated that up to 5% of adults in Western countries are likely to have undiagnosed OSA. It is more common in men, older people, and in people who are obese. It affects about 4% of middle aged men and 2% of middle aged women.

## Signs and symptoms of OSA

Often, the first person to recognise the signs of OSA is the bed partner of the OSA sufferer. The signs and symptoms of OSA include:

- Loud snoring
- Noisy and laboured breathing
- Repeated short periods where breathing is interrupted by gasping or snorting
- Sudden awakenings with a sensation of gasping or choking
- Daytime sleepiness or fatigue



- Dry mouth or sore throat upon awakening
- Morning headaches
- Trouble concentrating, memory problems, forgetfulness
- Depression
- Irritability or mood swings or personality changes
- Night sweats
- Gastroesophageal reflux
- Nocturia
- Restlessness during sleep
- Sexual dysfunction, including impotence and decreased libido
- Difficulty getting up in the mornings.

## Risk factors for OSA

It is quite a common misconception that OSA only affects older overweight men. OSA can affect anyone regardless of age, gender, or body type. Risk factors for OSA include:

- *Excess weight:* Fat deposits around the upper airway may obstruct breathing. However, not everyone with OSA is overweight.
- *Being male:* Compared to women, men have twice the risk.
- *Age:* Middle age and older adults (40+ for men and 50+ for women).
- *A large neck size:* 17 inches or more for men and 16 inches or more for women.
- *Nasal obstruction:* due to a deviated septum, allergies, or sinus problems.
- *Family history:* Sleep apnoea is known to run in families.
- *Smoker:* Smokers are three times more likely to have OSA than are people who've never smoked.
- *Physical features:* Certain physical features can block the upper airway e.g. a narrow throat, large tonsils or adenoids, recessed chin, low-hanging soft palate, or a deviated septum.
- *Use of alcohol or sedatives:* These substances relax the muscles in the throat.

## Possible complications of OSA

Left untreated, OSA can have life-shortening consequences. Its associations with chronic health problems include:

- It has been shown to be an independent risk factor for the development of hypertension.
- It increases the risk of stroke, regardless of whether or not the sufferer has hypertension.
- If an OSA sufferer has cardiac disease, multiple episodes of low blood oxygen can lead to sudden death from a cardiac event.
- It induces carotid artery atherosclerosis.
- It increases the risk for congestive heart failure by 2.3 times
- It is associated with cardiac arrhythmias.
- The incidence of OSA is very high in obese patients with type 2 diabetes.
- Gastroesophageal reflux symptoms may be caused or exacerbated by OSA.
- OSA sufferers are more likely to have abnormal results on liver function tests.
- OSA may worsen asthma symptoms and interfere with the effectiveness of asthma medications.
- The risk for depression rises with increasing severity of sleep apnoea.

## Nursing assessment for possible OSA

Awareness of OSA in general practice is still poor. It is vital to raise awareness to ensure that people with OSA gain access to the right care. Practice nurse awareness of OSA during routine monitoring could enable specific observations of patients, to

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If the patient's bed partner is present, important information may also be obtained from them as they may directly observe both nocturnal and daytime signs.

identify those at high risk, and ensure appropriate referral.

Assessing a patient for possible OSA begins with an interview that focuses on gathering information that might be suggestive of the condition. Based on knowledge of the signs and symptoms (outlined earlier) patients could be asked, for example:

- If they suffer from excessive daytime sleepiness and/or low energy
- If they have an inability to concentrate
- If they experience short-term memory loss or mood swings
- If they sometimes dose off at inappropriate times
- If they are irritable and short tempered
- If they have morning headaches
- If they get drowsy when driving

If the patient's bed partner is present, important information may also be obtained from them as they may directly observe both nocturnal and daytime signs. The presence of risk factors (outlined earlier) should also be considered in the nursing assessment.

The Epworth Sleepiness Scale is a validated, easily administered questionnaire that can help determine whether or not someone has OSA. Scores from this questionnaire can help determine if OSA seems likely and whether a sleep study is warranted. The Epworth Sleepiness Scale may be accessed via the following link:

[http://www.britishtnoring.co.uk/sleep\\_apnoea/epworth\\_sleepiness\\_scale.php](http://www.britishtnoring.co.uk/sleep_apnoea/epworth_sleepiness_scale.php)

In assessing a patient for the possibility of OSA, a practice nurse could also take into account the presence of comorbid conditions associated with OSA. These include coronary heart disease, hypertension, arrhythmia, congestive heart failure, myocardial infarction, stroke, metabolic syndrome, and type 2 diabetes. Gastroesophageal reflux disease and gout may also be present in patients with OSA.

If as a result of the GP's clinical evaluation, they also suspect sleep apnoea, they will most probably refer the patient to a sleep specialist who may decide to conduct an overnight full diagnostic polysomnography. Polysomnography records brain waves,

breathing effort and rate, air flow in and out of the lungs, oxygen levels in the blood, heart rate, eye movement, and electrical activity of muscles. It can determine the severity of sleep apnoea (if present) and identify other possible sleep disorders.

### Treatment

The treatment chosen for OSD depends in part on the severity of a particular patient's condition. It also involves consideration of the degree of risk involved for the patient concerned. The main current treatment options are:

#### **Continuous positive airway pressure (CPAP)**

Currently, Continuous positive airway pressure (CPAP) machines are the most common treatment for moderate to severe OSA. A CPAP machine pushes a steady stream of air through a mask that the patient puts on before sleep. The stream of air keeps the patient's airway open throughout the night to enable them to breathe. Some masks fit over the nose and others cover both the nose and mouth. In many cases, CPAP is not easy to use. Studies indicate that up to 50 percent of people who start using CPAP, stop using it. The many reasons include a feeling of claustrophobia, the noise of the machine, and the notion of it being cumbersome or inconvenient.

#### **Dental appliances**

Dental appliances, also called mouth devices may be helpful for mild to moderate cases of OSA. They are custom made and are worn over the patient's teeth while they are asleep. An appliance keeps the jaw forward, to prevent the patient's airway from collapsing, so they can breathe without obstruction while asleep. These appliances must be fitted by a dentist or orthodontist. For an appliance to fit properly the patient must have natural teeth.

#### **Surgery**

For severe cases of OSA there is a large variety of surgical procedures available, but limited evidence for their efficacy. Surgery must address the site or sites of obstruction that compromise the patient's airflow. For some patients, a surgical option is the use of palate implants to stiffen the palate and prevent it from collapsing into the pharynx where it can obstruct the airway. For morbidly obese patients with severe sleep apnoea, bariatric surgery is an option.

#### **Behavioural approaches**

Behavioural approaches include the following:

#### **Weight loss**

Studies have found that weight-loss programmes can be an effective treatment for OSA in patients who are overweight. However, this is unlikely to be successful in patients with a narrow airway.

#### **Orofacial myofunctional therapy**

Recent research has demonstrated that orofacial myofunctional therapy (OMT) may reduce the symptoms of sleep related breathing disorders such as snoring, and ameliorate mild to moderate OSA. When functioning properly, the muscles of the tongue, throat, and face, can reduce obstruction to the airway. OMT developed out of orthodontics and speech-language pathology. It is based on re-patterning (or re-educating) oral and facial muscles and techniques to improve breathing, swallowing, and chewing. It also promotes good tongue positioning.



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paracetamol are uncommon. Papillary necrosis has been reported after prolonged administration. Adverse effects of paracetamol are rare but hypersensitivity, including anaphylaxis and skin rash may occur. Blood and the lymphatic system disorders: Thrombocytopenic purpura, haemolytic anaemia, agranulocytosis. Hepato-biliary disorders: Anaphylaxis, Chronic hepatic necrosis, liver damage, Nephrotoxic effects. Immune system disorders: Papillary necrosis. Skin and subcutaneous: Skin rashes (with or without itching). Social circumstances: Overdose. **Name address of the holder of the marketing authorisation:** McNeil Healthcare (Ireland) Ltd, Ailton Road, Tallaght, Dublin 24, Ireland. **Marketing authorisation number:** PA 823/10/S. **Date of revision of text:** November 2012. **Classification:** General sale in child resistant packs containing not more than 60ml of the 120mg/5ml dose form. Retail sale through pharmacy in child resistant packs containing not more than 140ml of the 120mg/5ml dose form. Further information available upon request from Johnson & Johnson (Ireland) Ltd.

## **Breathing retraining**

Since OSA is characterized by disruptions of normal breathing patterns during sleep, 'breathing retraining' is gaining in popularity as a treatment approach. Research has shown the effectiveness of 'breathing retraining' in normalising dysfunctional breathing patterns. The goal is to normalise each aspect of the breathing pattern for all situations i.e. awake, asleep, at rest, while speaking and during exercise. A survey conducted in 2010 investigated the effectiveness of 'breathing retraining' (using the Buteyko method) in over 11,000 sleep apnoea sufferers. The results revealed that over 95 percent of participants had improved sleep; approximately 80 percent were able to cease use of their CPAP machine or dental appliance. Symptoms such as snoring, headaches, restless legs, low concentration levels and decreased energy levels improved in the majority of participants.

## **Smoking and alcohol**

Quitting smoking and not drinking alcohol may improve sleep apnoea symptoms. Alcohol relaxes the throat muscles and causes the airway to collapse.

## **Positional therapy**

In cases of mild sleep apnoea and in patients who only snore when they sleep on their back, symptoms may improve if they sleep on their side. There are a number of products available that patients can wear in bed to prevent them from sleeping on their back.

**Sleep apnoea sufferers stop breathing repeatedly as they sleep. Their breathing may stop anything from about 10 to over 100 times per hour of sleep and may not start again for up to a minute or more.**

## **Drug treatment?**

Numerous drugs have been investigated as potential primary therapies for OSA. However, none have been found to prevent or overcome upper airway obstruction sufficiently to justify pharmacological therapy as a primary therapy in the management of OSA. According to the conclusion of a recent (2013) Cochrane Database Systematic Review:

"There is insufficient evidence to recommend the use of drug therapy in the treatment of OSA."

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