



Tackling sleep apnoea

Obstructive sleep disorder can be fatal if left untreated.

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By:

Dennis Chua

OBSTRUCTIVE sleep apnoea (OSA) is a common and serious sleep disorder that causes you to stop breathing during sleep. The airway repeatedly becomes blocked, limiting the amount of air that reaches your lungs.

When this happens, you may snore loudly or make choking sounds as you try to breathe. Your brain and body becomes oxygen-deprived and you may wake up. This may happen a few times a night, or in more severe cases, several hundred times a night without you noticing.

Classic symptoms of an OSA sufferer include:

- Snoring
- Disturbed sleep with choking
- Frequent awakenings
- Fatigue

In a study by Jurong Health published by Straits Times on March 18, 2016 - It is estimated that 1 in 3 Singaporeans have moderate to severe OSA. The lack of oxygen your body receives can have negative long-term consequences for your health. These include:

- High blood pressure (hypertension)
- Heart disease
- Stroke
- Diabetes mellitus
- Cognitive impairment (e.g. memory loss)
- Poor performance in school
- Early Onset Dementia
- Depression
- Motor vehicular accidents

OSA can result in drug-resistant hypertension. Patients may note a gradual increase in the dosage of medication needed to control the hypertension.

Left untreated, OSA can lead to heart disease as well. The disturbed sleep in an OSA sufferer can lead to an increase in inflammatory markers in the blood.

These proteins are released when the body is under stress including during disturbed sleep. The same proteins can damage the blood vessel wall leading to a build-up of atheroma (artery-blocking plaques) and calcium deposits in the coronary arteries and neck vessels. This can significantly increase the chance of suffering from a heart attack or sudden death.

In many patients with disturbed sleep, this can result in accumulation of a protein beta-amyloid which is normally removed from the brain during normal sleep.

Excessive levels of this protein beta-amyloid can result in Alzheimer's Disease (Dementia). It has been shown in several studies that OSA sufferers have a higher chance of experiencing cognitive impairment such as memory impairment or difficulty in concentration.

Several of these symptoms have been incorrectly attributed to ageing when in fact treatment of OSA can lead to reversal of these cognitive impairment. Another consequence of untreated OSA are mood changes such as depression.

According to a study published in the Journal of Clinical Sleep Medicine in 2015, 70 per cent of OSA patients experience symptoms of depression. This can lead to a significant decrease in the quality of life. In another study of 18,980 people in Europe conducted by Stanford researcher Maurice Ohayon, people with depression were found to be five times more likely to suffer from sleep-disordered breathing (OSA is the most common form of sleep disordered breathing). However, the good news is that if the OSA patients are treated, the depression can be reversed.

OSA in women usually presents in an atypical fashion and tends to be underdiagnosed. Female OSA sufferers may present with different symptoms than the "classic" symptoms of snoring, disturbed sleep and excessive sleepiness during the day. Instead, women may present with fatigue, insomnia, morning headaches, mood disturbances or other symptoms that may suggest reasons other than OSA for

their symptoms. The health consequences of OSA in women is similar to men and this condition must be treated urgently as well.

Obstructive sleep apnoea in children

While the typical OSA sufferer is the middle-aged male who snores, OSA can occur in children as well. OSA in children has been recognised since the 1970s and since then the effects of paediatric OSA has been well-studied.

Consequences of untreated obstructive sleep apnoea include failure to thrive, enuresis (bed-wetting), attention-deficit disorder, behaviour problems, poor academic performance, and cardiopulmonary disease. The most common etiology of obstructive sleep apnoea in children is adenotonsillar hypertrophy.

Clinical diagnosis of obstructive sleep apnoea in the clinic is reliable and may not warrant a sleep study if the cause of OSA is obviously from the adenotonsillar hypertrophy. According to the American Academy of Otolaryngology 2011 Clinical Practice Guideline, a sleep study will be necessary in children who have comorbidities such as obesity, Down's Syndrome, neuromuscular diseases, sickle cell disease or mucopolysaccharidoses. Overall, less than 10 per cent of children who suffer from OSA will need a sleep study before surgery.

Behaviour and cognitive deficits can occur in children who snore. Poor academic performance during teenage years is associated with snoring. In a publication in the journal Pediatrics in 2001, the report showed that treatment of OSA in children leads to improvement in academic performance and resolution of cognitive deficits.

What you can do?

- Evaluation by an ENT specialist or sleep physician
- Sleep study to diagnose and assess severity of condition

A thorough assessment by an ENT specialist or sleep physician is necessary to diagnose, assess the severity of OSA and institute the appropriate treatment. Frequently, there are several common sites of narrowing in one's nasal and oral passages that can result in the obstruction and a nasoendoscopy will be able to accurately assess for the narrowest parts of the air passages as treatment will differ depending on the cause of obstruction.

A sleep study that is commonly performed for adults will diagnose and classify the severity of obstructive sleep apnoea. This usually involves monitoring some parameters during one's sleep at night with the help of some wires attached to the patient. An important point to note is the accuracy of the sleep study. Some patients may suffer from a "first-night-effect" during the sleep study which can affect the accuracy and under-diagnose the disease.

Treatment frequently includes a multi-pronged approach:

- Change in diet and lifestyle including exercise
- Medications to treat conditions such as allergic rhinitis
- Oral appliances
- Use of Continuous Positive Airway Pressure (CPAP) machine
- Surgery in selected cases where the nasal or oral passages are narrow

General and behavioural measures, such as weight loss, avoidance of alcohol for four to six hours prior to bedtime, healthy diet and sleeping on one's side rather than on the stomach or back, are elements of conservative non-surgical treatment.

Regular exercise can lead to weight loss which can improve OSA especially in obese individuals. Because obesity is a major predictive factor for OSA, weight reduction reduces the risk of OSA. In fact, the major cause of relapse of OSA after successful treatment would be weight gain. Obesity results in an increased deposition of fatty tissues around the neck and can lead to narrowed oral passages with obstruction.

Medications are important in patients with concomitant diagnosis of allergic rhinitis. Frequently these patients have narrowed nasal passages and mouth-breathe at night to obtain more air. They can also experience mouth dryness upon awakening in the morning. Medications such as nasal steroid sprays and antihistamine tablets can help to improve nasal airflow and help in improving the OSA.

Oral appliances act by pulling the tongue forward or by moving the mandible and soft palate anteriorly, enlarging the posterior airspace. These are possible options in a select group of patients with mild-moderate OSA.

However, oral appliances have limited efficacy and downsides associated with its use include excessive salivation, dental misalignment with bite change, gum irritation and even temporomandibular joint disease with pain on chewing.

A CPAP machine is a very effective way of treating OSA if tolerated by the patient. This device uses a face mask attached to a machine via tubing to pump air into the patient during sleep to overcome the problem of obstruction in the air passages.

The biggest downside of CPAP is compliance. Most patients are not able to use this on a nightly basis for the full duration of the sleep due to side effects such as feeling of claustrophobia and difficulty exhaling.

Surgery is generally useful in two categories of patients with OSA: those who have nasal obstruction prior to starting CPAP therapy and in patients with obvious source of obstruction in the air passages (such as adenotonsillar hypertrophy) where the surgery can cure the condition.

In patients who require CPAP but have nasal obstruction, nasal surgeries may be necessary to widen the nasal passage prior to CPAP. Otherwise, the patient will not be able to tolerate the CPAP and is doomed to fail from the outset. This is because CPAP therapy is dependent on the patient's nasal passages being "patent" so that air can be pumped into one's lungs via the machine.

In the second category of patients, there can be an obvious source of obstruction in the nasal and oral passages. An example would be in children who suffer from OSA. Frequently, these pediatric patients may have adenotonsillar hypertrophy whereby the nasal and oral passages are narrowed by the enlarged tonsils and adenoids.

If the child also has symptoms of mouth breathing at night with snoring, choking and breath-holding (apnoea) along with signs of adenotonsillar hypertrophy, the next step would be adenotonsillar surgery to help widen the nasal and oral passages.

Thankfully there are several minimally invasive techniques of surgery these days that help to minimize pain and hasten post-operative recovery.

These surgeries can usually be performed as a day surgery.

Dr Dennis Chua is a USA Fellowship Trained ENT Surgeon who specialises in snoring and sleep diseases.

He is currently Medical Director of ENT Surgeons Medical Centre located at:

3 Mount Elizabeth

#08-02 Mount Elizabeth Medical Centre

Singapore 2285109