

SLEEP DISORDERS & RELATED RISKS



Sleep Disorders and Related Risks

Sleep disorders have been implicated as risk factors in a number of other health problems. Sleep deprivation, whether due to a reduced quantity of sleep or a disturbed quality of sleep, affects a variety of essential functions and hormone balances, and contributes to an increased risk of heart disease, high blood pressure, obesity and diabetes. It affects general mental functioning, in particular, daytime alertness, memory functions, and decreased learning ability. There is some recent evidence that sleep deprivation also depresses the immune system which means the body is less able to fight off viruses and infections.

Hypertension (High Blood Pressure)

Hypertension is a serious medical condition that adversely affects many systems in the body. It is a major cause of atherosclerosis (thickened artery walls) and may lead to blood clots and strokes. Hypertension can also lead to heart attacks, kidney disease, peripheral vascular disease and retinopathy. Research has shown that insomnia sufferers who regularly get less than 5 hours of sleep per night are at a high risk for hypertension, probably due to changes in hormone activity. People with untreated sleep apnea are also at risk for hypertension. This may be due to the overall lack of proper sleep, or it may be as a result of the extra blood flow needed after an apnea to compensate for low oxygen levels. Research has shown that when sleep apnea patients are treated with CPAP, their blood pressure goes down, not only at night, but during the day as well.

Heart Disease

Sleep apnea starves the body's vital organs of oxygen throughout the night. This puts a strain on the heart as it tries to compensate. Researchers have found sleep apnea to be an independent risk for a variety of cardiovascular diseases, and an exacerbating factor in nocturnal angina in patients with coronary artery disease. When breathing recommences after an apnea the heart muscles are called on for greater exertion, just at a time when their own oxygen supply has been compromised. During recent research studies, when a group of patients with heart failure were tested in a sleep study, approximately half had severe undiagnosed sleep apnea. Research is ongoing, but it seems clear that people with moderate to severe sleep apnea have an increased risk for heart attack, vascular disease and pulmonary hypertension.

Obesity

Obesity contributes to sleep apnea, and sleep apnea contributes to obesity. In fact, most sleep disorders can contribute to obesity. Researchers have found that people who don't get enough sleep can develop increases in appetite and kilojoule intake. In a university study, they found that in the group getting less than 6 hours sleep per night, their levels of the hormone leptin fell, leading to a greater appetite. The same group also produced approximately 30% more insulin to maintain their normal blood sugar levels. Higher insulin levels are associated with higher levels of fat storage. As lack of sleep also results in tiredness and lowered activity rates, so obesity is encouraged on three fronts: higher kilojoules taken in, lower energy given out, and insulin stimulating fat storage. In the case of sleep apnea, the weight gain affects the fat in the neck, and the air passage collapses more easily, leading to a worsening of the sleep apnea, which leads to further increases in obesity, and a vicious cycle ensues.

Diabetes

Research has shown that short sleep duration has direct effects upon the risk of diabetes, independent of its influence upon body weight and blood pressure, and body weight and hypertension also act as partial contributors to diabetes. A study by scientists at the University of Chicago found that after restricting 11 healthy young adults to only four hours sleep for six consecutive nights, that their ability to process glucose had declined – in some cases to the level of diabetics. Other studies have shown that subjects who regularly slept 5 hours or less were twice as likely to develop diabetes over the 10 year follow-up, as those who slept 7 hours or more. Research statistics indicate that approximately 50% of men living with diabetes also have sleep apnea, and 50% of sleep apnea patients tested when attending a sleep clinic, were shown to have impaired glucose intolerance. Recent studies of young healthy males showed that sleep deprivation for only two nights increased insulin, increased ghrelin and decreased leptin, translating into decreased glucose tolerance and an increased appetite for carbohydrate-rich foods. One research article concluded that "If short sleep duration increases insulin resistance and decreases glucose tolerance, then interventions that increase the amount and improve the quality of sleep could serve as treatments and primary preventative measures for diabetes".

Brain Functioning

Studies have shown that normal humans require between 7 and 9 hours of sleep per night. There has been a lot of research looking at the effects of sleep deprivation on various brain functions. People asked to perform tasks after spending a night without sleep, had impaired abilities comparable to people under the influence of alcohol. A lack of sleep impacts most notably on attention and working memory, which can have disastrous consequences in road accidents, operating machinery, forgetting about fire hazards, etc. People who are sleep deprived have impaired learning abilities, slower reaction times and poorer judgment. Severe sleep deprivation can lead to psychosis and hallucinations.

Sexual Function

Sleep apnea has been shown to be associated with impaired sexual function for both men and women. Excessive tiredness can contribute to a low libido, as can a reduction in hormone levels such as testosterone, which can occur as a result of sleep apnea. Many factors can contribute to declining erectile function, one of which is untreated sleep apnea. This can be due to blood vessel walls not expanding as well as they should to allow for increased blood flow, or a decline in testosterone, or impaired night time erections due to broken sleep associated with sleep apnea. Treatment of sleep apnea using CPAP has been shown to improve erectile function in about half of men who have both sleep apnea and erectile dysfunction

Nocturia and Overactive Bladder

Nocturia can be caused by a variety of factors including inadequate functioning of the heart muscle, benign prostate hyperplasia and overactive bladder. Increased nocturia in patients with sleep apnea is believed to be caused by elevated night time excretion of a protein secreted by heart muscle cells in response to high blood pressure. CPAP treatment in sleep apnea patients results in improvements of their nocturia. Researchers found that the overall prevalence of overactive bladder in patients with obstructive sleep apnea was 39%, which is considerably higher than the average. Patients with moderate and severe sleep apnea are more likely to present with symptoms of overactive bladder compared with the average population.

SUMMARY - Please read these very important points.

- 1) Sleep Disorders such as insomnia, sleep apnea and restless legs syndrome cause sleep deprivation through a reduction in the quantity of sleep and/or a disturbance in the quality of sleep.
- 2) The effects of short-term sleep deprivation can be seen immediately in fatigue, poor performance and irritability.
- 3) The unseen effects of short-term sleep deprivation also include higher blood pressure and undesirable changes to a number of hormone levels, notably insulin, leptin and ghrelin.
- 4) A lack of sleep has been shown to be an independent risk factor in cardiovascular diseases such as heart disease, hypertension and stroke.
- 5) A lack of sleep has also been shown to be an independent risk factor in the "metabolic syndrome" disorders such as diabetes and obesity.
- 6) Insufficient sleep has economic as well as social impacts, as it leads to poor work performance, poor learning ability and increases in accidents
- 7) People suffering from disorders with related risks should discuss with their doctors whether their sleep problems may be contributing to their other disorders. Treating your sleep problem may help to improve other conditions.

DISCLAIMER - Information provided in this fact sheet is general in content and should not be seen as a substitute for professional medical advice. Concerns over sleep or other medical conditions should be discussed with your family doctor.

©2012 Sleep Disorders Australia, South Australian Branch