Too much or too little sleep can lead to coronary heart disease

A new study of nearly 400,000 people shows that getting enough sleep may be especially important for women and the elderly.

Sleeping less than four hours or more than eight hours a night increases the risk of dying from some types of coronary heart disease, such as heart attacks and unstable angina pectoris, according to a study by Norwegian and Taiwanese researchers.

“This is the single largest study that has looked at how sleep duration affects the risk of dying from cardiovascular disease. Our results show that enough, but not too much sleep is important for a healthy lifestyle,” says first author and postdoctoral fellow Linn Beate Strand at the NTNU’s Department of Public Health and General Practice.

Increased risk from too little sleep

Doctors asked 392,164 adults who came for a health check in Taiwan between 1998 and 2011 how long they usually slept at night. Of those, 711 of the participants died of cardiovascular disease during the follow-up period. It turned out that the risk increased 50 per cent for participants who slept fewer than four hours compared with participants who slept between six and eight hours.

Part of the difference might be explained by the fact that participants who slept the least had a less favourable risk profile for cardiovascular disease, but even after adjusting for these factors, the risk of heart-related death increased by 36 per cent.

According to Strand, exactly how too little sleep affects the risk of dying from cardiovascular disease is still uncertain, but a number of theories have been proposed to explain the phenomenon. Less sleep is associated with stress responses that increase heart rate, blood pressure and secretion of adrenaline, for example, all of which are known risk factors for cardiovascular disease.

Sleep deprivation has also been associated with the secretion of inflammatory substances, and previous studies have shown an association between short sleep duration, decreased insulin sensitivity, obesity and diabetes.

..and too much sleep isn’t good either

Participants who reported that they slept more than eight hours a night also had a 53 per cent increased risk of dying from coronary heart disease compared with participants who slept between six and eight hours. After adjusting for other risk factors, the risk was still 28 per cent higher.

“We don’t know the mechanisms that could explain a direct causal link between long sleep duration and an
increased risk of dying from coronary heart disease,” Strand says.

Education and marital status were among the variables that the researchers adjusted their analyses for, in addition to well-known risk factors such as age, sex, BMI, systolic blood pressure, blood glucose, blood lipids, smoking, alcohol use, physical activity level and previous cardiovascular disease or diabetes. The increased risk could not be explained by the use of sleep medications.

Nevertheless, part of the explanation could lie in factors that researchers lacked information on and that could potentially be associated with both increased cardiovascular risk and prolonged sleep, such as unemployment, low socioeconomic status, depression and sleep apnoea.

Women and the elderly most at risk

No increased risk was associated with sleeping between four and six hours a night as compared to sleeping between six and eight hours.

Furthermore, researchers found that the increased risks of both short and long sleep duration primarily affected women. The relationship between sleep duration and the risk of dying from cardiovascular disease was also slightly stronger in the 65 years and older population than in younger individuals.

“Women are more prone to sleep problems than men, and previous studies have also shown that women who sleep a little or a lot may be at increased risk for cardiovascular disease,” says Strand. She emphasizes that the findings should be interpreted with caution and do not necessarily mean that short or long sleep duration is more dangerous for women than for men.