# Poor-Quality Sleep Linked to Fatty Liver Disease

People with a tendency to be active later in the day may be at greater risk for severe NAFLD.

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Disturbed nighttime sleep, daytime napping and snoring are associated with an increased risk of metabolic-associated fatty liver disease (MAFLD), according to research published in the Journal of Clinical Endocrinology & Metabolism. Another study found that night owls may also be at greater risk for more severe fatty liver disease, researchers reported in the International Journal of Obesity.

Arising from the accumulation of fat in the liver, non-alcoholic fatty liver disease (NAFLD) and its more severe form, non-alcoholic steatohepatitis (NASH), are responsible for a growing proportion of advanced liver disease in the United States and worldwide. In many cases, liver fat accumulation is associated with obesity and diabetes, so it is sometimes referred to as metabolic-associated fatty liver disease, or MAFLD. Fatty liver disease can lead to liver fibrosis, cirrhosis and even liver cancer. With no effective approved medical therapies, management is dependent on lifestyle changes, such as weight loss and exercise.

MAFLD and Sleep Disorders

Previous research has suggested that disturbances in sleep are related to metabolic conditions, so Yan Liu, PhD, of Sun Yat-sen University in China, and colleagues conducted a study to assess whether sleep behaviors affect the risk of developing MAFLD.

The study included 5,011 participants between the ages of 30 and 79 who lived in southern China. They were diagnosed with MAFLD if imaging showed an accumulation of liver fat that occurred together with overweight, obesity, diabetes or other metabolic dysfunction. Around 28% were given a diagnosis of MAFLD.

Based on the participants' reported sleep behaviors, the researchers calculated a healthy sleep score and assessed potential links between sleep and MAFLD risk. Having a bedtime before 11 p.m., sleeping seven to eight hours a night, taking shorter daytime naps and having few occurrences of snoring or insomnia were each worth one point. A higher score indicated better quality sleep. The score was adjusted for demographics, lifestyle, medication use and comorbidities.

People with low sleep-quality scores were at highest risk for MAFLD, while those with good or moderate sleep quality were less likely to have the condition. Having a late bedtime, napping for longer than 30 minutes during the day and snoring were each strongly linked to greater risk. Among all the sleep behaviors, snoring had the largest impact: People who snored were 59% more likely to have MAFLD than those who did not snore, after adjusting for obesity and other factors. People with disturbed nighttime sleep who took long daytime naps had more than double the risk for NAFLD. With every one-point rise in the healthy sleep score, MAFLD risk dropped by 16%.

A deeper analysis found that people with a sedentary lifestyle and abdominal obesity were more likely to be affected by poorer sleep. But obesity was responsible for only 21% of the total impact of sleep quality on MAFLD risk.

“Sleep behaviors, both cumulatively and individually, are associated with MAFLD risk,” wrote the study authors. “Public health awareness and strategies should be encouraged to curb MAFLD.”

Chronotype and Fatty Liver Disease

In another study, Claudia Vetrani, PhD, and Giovanna Muscogiuri, MD, of University Federico II in Italy, and colleagues sought to understand the potential link between fatty liver disease and chronotype in people with obesity. Chronotype refers to a person’s ability to carry out activities at a specific time of day—basically, whether they are a “morning lark” or a “night owl.” Chronotype has previously been shown to play a role in metabolic disorders.

A total of 87 people with NAFLD and obesity were included in the study; 74% were women, and the average age was 40 years. Based on their chronotype score, 31% had a morning chronotype, 37% had an intermediate chronotype and 32% had an evening chronotype. People with an intermediate chronotype were younger, on average, than those with morning or evening chronotypes.

People with an evening chronotype had significantly larger waist and hip circumferences as well as a higher body mass index (BMI) than those with a morning chronotype. They also had higher BMI and waist circumference than people with an intermediate chronotype.

While all participants had NAFLD, only those with an evening chronotype exceeded the threshold for NASH, or severe fatty liver disease. Moreover, these individuals scored significantly higher on visceral adiposity, liver fat, steatosis and NASH indices, even after adjusting for age, sex and BMI.

“Evening chronotype is associated with more severe NAFLD independently of age, gender, and BMI than morning chronotype and intermediate chronotype in individuals with obesity,” the researchers concluded.

“[T]he relationship between chronotype and obesity might be explained by hormonal, behavioral and lifestyle features that deeply impact circadian rhythm and body weight management,” they suggested. They next plan to treat “misaligned” individuals using therapies that affect circadian rhythms.

Click here to read the MAFLD and sleep abstract in the Journal of Clinical Endocrinology & Metabolism.

Click here to read the chronotype study abstract in the International Journal of Obesity.

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