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INADEQUATE SLEEP INCREASES THE RISK OF FATTY LIVER DISEASE

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In 2018, anatomists at the Toho University Graduate School of Medicine, Tokyo, Japan, performed a sleep deprivation experiment on lab mice. Mice usually sleep for 12 hours a day. In this experiment, researchers induced sleep deprivation using the ‘gentle handling method’ during sleep hours so that the mice could sleep only for six hours daily.

They discovered that liver fat content in sleep-deprived mice increased without total weight gain compared to another group who were allowed to sleep normally. The liver cells were stressed, and the activity of certain genes that escalate insulin resistance and fat content within liver cells also increased with sleep deprivation.

Three years later, a group of Chinese researchers at the Xinjiang Medical University went one step ahead. In this experiment, rats were severely sleep-deprived, turning into insomniacs. Liver enzymes, blood, and liver fat increased substantially. None of these changes were notable among rats who were allowed to sleep without distractions.

They also found the reason for increased liver fat in insomniac mice — the sympathetic nerves that supplied the liver, best known for their role in responding to stress and danger, were hyperactive. When insomnia was treated with a sleeping pill in these stressed rats, the liver fat was reduced with adequate sleep.

There are lessons here, of mice and men. Sleep is an underrated activity among humans. Sometimes, the intentional and forced lack of sleep ‘to increase productivity’ is advertised by men in power to showcase their self-proclaimed metahuman nature. During an interview in 2011, Prime Minister Narendra Modi said he had become a workaholic and hardly slept for 3.5 hours in a day, and that yoga and *pranayama* routine kept him energised and awake.

But medical science has a different story to tell. A study of nearly 55,500 people from Europe showed that those who slept 7-8.5 hours daily had higher life expectancy than those who slept less than seven hours. In those between ages 50 and 75 without sleep disturbances, the expectation of living longer without chronic disease development was significantly higher.

And yoga interventions improved overall sleep quality, efficiency, latency, and duration, contrary

to all claims.

Sleep is a vital function of human life and accounts for up to one-third of the lifespan. Contrary to normal belief, during sleep, the brain is not ‘resting’ but is engaged in various activities necessary to improve well-being, increase life, and especially impact the liver. The minimum required duration for ‘healthy’ sleep is seven hours.

When 10,000 persons with sleep disorders were followed up for one year, incident fatty liver disease was noted in 14, while in those without sleep disorders, it was only six. Non-alcoholic fatty liver disease association was significantly higher among persons with shorter sleep duration (less than six hours per night) and excessive daytime sleepiness. A high-quality study showed that inadequate sleep duration was strongly associated with an elevated risk of developing non-alcoholic fatty liver disease, and adequate sleep helped prevent it. With every one-hour decrease in sleep time from the recommended seven-eight hours, the risk of fat deposition in the liver increased by 24% compared with those who slept adequately.

However, when people who lost sleep during the weekdays caught up on the debt during weekends (known as weekend catch-up sleep), the development of fatty liver disease reduced significantly. Compared with non-nappers, long daytime nappers (more than 60 minutes) had a higher risk of developing non-alcoholic fatty liver disease.

Correlation may not be causation, but with non-alcoholic fatty liver disease, which is associated with other conditions such as obesity, high blood pressure, increased waist-hip ratio, low functioning thyroid, and high blood cholesterol, studying and identifying independent associations make realistic sense.

In people who sleep less than six hours at night, have a persistently poor sleep quality, or nap more than one hour during the day, independent of other disease conditions, non-alcoholic fatty liver disease development was a strong association. The next time someone brags that sacrificing time and quality of sleep is an achievement associated with success, know that success comes with fatty liver disease. And it is not worth it.

(Cyriac Abby Philips is a senior consultant and physician-scientist at the Liver Institute, Rajagiri Hospital, Kochi)

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