Circadian rhythms ‘affect fat levels in blood’

Researchers studying link between sleep and how body stores fat

By GRACE CHUA

YOU may be an early riser or a night owl, but your body has its own timing for many other processes.

And that may explain why some on late-night shift work get fatter and are more at risk of metabolic diseases like diabetes than other shift workers, said Assistant Professor Joshua Gooley of the Duke-NUS medical school.

He led a four-day study of 20 healthy young Chinese men here, measuring the level of lipids, or molecules that store fat, in their blood samples.

Researchers found that these levels roughly follow 24-hour patterns called circadian rhythms — and that the timing of these rhythms differs from person to person by as much as 12 hours.

“Some people’s circadian pattern of lipids is probably better suited for shift work than others,” said Prof Gooley, adding that there may be a genetic basis for these differences.

The types of lipids that follow these clockwork patterns are useful for storing and transporting energy. But excess lipids in the blood can lead to plaques forming in the arteries, which can cause heart attacks or strokes.

And if someone’s blood-lipid levels are higher at night, eating late at night could lead to even higher levels of fat in the bloodstream, which in the long run could affect his health, Prof Gooley explained.

There is also no correlation between these lipid rhythms and whether someone is most alert early or late, a “morning lark” or “night owl”, he added.

And it is not clear whether the particular lipids found to follow a 24-hour pattern are from food the men ate, or were made by their livers.

The work was published this week in the top journal Proceedings Of The National Academy Of Sciences.

While this study of 20 people who had their blood drawn every four hours does not sound big, it is actually the most extensive and detailed such study done.

Most other similar studies are of fewer people, or look at blood lipid levels at only one point in time as such analyses can be costly.

The team is now studying the impact of sleep deprivation on lipid levels.

Previous studies here have shown that Chinese, Malays and Indians here have different risks of metabolic and cardiovascular disease, so “it would be nice” to study other groups besides the 20 Chinese men in the project, Prof Gooley said.

He said: “Given the kind of individual differences that we see in this very narrow population, if you look at women or other ethnic groups, it wouldn’t be unexpected to see differences.”

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