Nighttime fast may top calorie counting, study finds

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In an age of long commutes, late sports practices, endless workdays and 24/7 television programming, the image of Mom hanging up her dish towel at 7 p.m. and declaring "the kitchen is closed" seems a quaint relic of an earlier era.

It also harks back to a thinner America. And that may be no coincidence.

A new study, conducted on mice, hints at an unexpected contributor to the nation's epidemic of obesity - and, if later human studies bear it out, a possible way to have our cake and eat it too, with less risk of weight gain and the diseases that come with it.

Just eat your cake - or better yet, an apple - earlier. Then wait 16 hours, until breakfast the next morning, to eat again.

"We have to come up with something that is a simple alternative to calorie counting," said Satchidananda Panda, a regulatory biologist at the Salk Institute in La Jolla, Calif., who led the study published online Thursday by the journal Cell Metabolism.

Panda and his team put groups of mice on different eating regimens for 100 days. Animals in two of the groups dined on high-fat, high-calorie chow. Half of them were allowed to eat whenever they wanted, and nibbled on and off throughout the night and day. The other mice had access to food only for eight hours at night, when they were most active.

In human terms, this would be rough: No ice cream while watching "Glee." No second glass of wine while talking things over with the spouse. Not even a late-night glass of warm milk.

The difference was astonishing. Even though they ate a high-fat diet, the mice who wrapped up their eating day early and were forced to fast for 16 hours were lean - almost as lean as mice in a control group who ate regular chow. But the mice who noshed on high-fat chow around the clock became obese, even though they consumed the same amount of fat and calories as their counterparts on the time-restricted diet.

Extra weight wasn't their only problem. The obese mice developed high cholesterol, high blood sugar, fatty liver disease and metabolic problems. The mice who ate fatty food but were forced to fast showed hardly any signs of inflammation or liver disease, and their cholesterol and blood sugar levels were virtually indistinguishable from those of mice who ate regular chow. When put on an exercise wheel, they showed the most endurance and the best motor control of all the animals in the study.

The data suggest that the stomach, the brain and the body's digestive machinery need to take a break from managing incoming fuel; otherwise, we may be working ourselves into a state of metabolic exhaustion. When combined with high-calorie, high-fat diets, the result is weight gain, a liver clogged with fat, accumulation of cholesterol in the arteries and unused glucose in the blood.

In the mice who fasted for 16 hours daily, measures of digestive hormones, cholesterol and glucose suggested that liver enzymes were working hard to break down cholesterol into bile acids. The body's stores of "brown fat," the stuff that converts extra calories into heat, were revved up, and the liver ceased production of glucose. As they burned fat, their body temperatures were actually higher, Panda said.

The results of daily fasting were "phenomenal," he said.

If only we were mice.

Leo Garcia, a 37-year-old auto mechanic whose adult years have been a steady march up the scale, said he was intrigued by the notion that he could lose some of his 250 pounds by wrapping up his mealtime early and resisting the urge to nibble. "It seems easier to do something like that than to join a gym and do cardio," he said.

But the study drew both exasperation and cautious interest from obesity researchers, who underscored that lab mice aren't tempted by fast-food restaurants with late-night specials and have no alternative to the menu and feeding schedule set by lab technicians. Being nocturnal, they also have different circadian clocks. The conclusion that humans could prevent or reverse obesity by wolfing down steak and chips for eight hours and then stopping for 16 would be premature and almost certainly dangerous, some said.

"I hope it's true, but I doubt it," said Barbara Corkey, director of obesity research at Boston University School of Medicine.

Barry M. Popkin, a nutrition expert at the University of North Carolina, said the study plies "uncharted territory" that needs exploration. A clinical trial published in 1992 suggested that eating frequent, small meals resulted in better insulin control and longevity.

"This one study cannot tell us that this science is wrong," Popkin said. "However, it is suggestive that scholars in the diabetes, obesity and other areas related to heart disease need to test this issue further in animals and humans."

Panda acknowledged that his research would need to be refined and

tested in humans before it could be used to fight the war against obesity. The 16-hour fast that was so effective in preventing obesity in mice "may not be a magic number" for people, he said.

But extending the nighttime fast is a cheap and simple dietary adjustment that has no discernible side effects and doesn't require anyone to count calories or even deprive themselves - unless you just can't watch a playoff game without a beer or can't fall asleep without tea and honey.

All you need is a clock, said Panda, who noted that most after-dinner snacks are high in fat, sugar, salt and calories, and are best cut out anyway.

Research into the basic drivers of obesity - both social and biological - are under greater scrutiny than ever. Pharmacological help for the nation's 78 million obese adults and 12.5 million obese children has been elusive, as have the keys to behavior change for enduring weight loss.

Scientists acknowledge that obesity results from a complex mix of genetic and environmental factors, such as sedentary lifestyles, consumption of sweetened soft drinks, growing portion sizes and the increasing role of calorie-rich restaurant meals in American diets.

Panda thinks researchers may be overlooking the role that timing has on the body's response to food. In the agricultural lifestyle of an earlier time, Americans ate heartily but were thinner. "Most people ate mostly in daytime," Panda said.

Today, however, "our social life starts at sunset. Family time starts at the evening. So essentially, we have increased our eating time in the last 40 to 50 years."