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Does intermittent fasting increase or decrease risk of cancer?

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Research over the years has suggested intermittent fasting has the potential to improve our health and reduce the likelihood of developing cancer.

So what should we make of a new study in mice suggesting fasting increases the risk of cancer?

What is intermittent fasting?

Intermittent fasting means switching between times of eating and not eating. Unlike traditional diets that focus on what to eat, this approach focuses on when to eat.

There are lots of commonly used intermittent fasting schedules. The 16/8 plan means you only eat within an eight-hour window, then fast for the remaining 16 hours. Another popular option is the 5:2 diet, where you eat normally for five days then restrict calories for two days.

In Australia, poor diet contributes to 7% of all cases of disease, including coronary heart disease, stroke, type 2 diabetes, and cancers of the bowel and lung. Globally, poor diet is linked to 22% of deaths in adults over the age of 25.

Intermittent fasting has gained a lot of attention in recent years for its potential health benefits. Fasting influences metabolism, which is how your body processes food and energy. It can affect how the body absorbs nutrients from food and burns energy from sugar and fat.

What did the new study find?

The new study, published in *Nature*, found when mice ate again after fasting, their gut stem cells, which help repair the intestine, became more active. The stem cells were better at regenerating compared with those of mice who were either totally fasting or eating normally.

This suggests the body might be better at healing itself when eating after

fasting.

However, this could also have a downside. If there are genetic mutations present, the burst of stem cell-driven regeneration after eating again might make it easier for cancer to develop.

Polyamines—small molecules important for cell growth—drive this regeneration after refeeding. These polyamines can be produced by the body, influenced by diet, or come from gut bacteria.

The findings suggest that while fasting and refeeding can improve stem cell function and regeneration, there might be a tradeoff with an increased risk of cancer, especially if fasting and refeeding cycles are repeated over time.

While this has been shown in mice, the link between intermittent fasting and cancer risk in humans is more complicated and not yet fully understood.

What has other research found?

Studies in animals have found intermittent fasting can help with weight loss, improve blood pressure and blood sugar levels, and subsequently reduce the risks of diabetes and heart disease.

Research in humans suggests intermittent fasting can reduce body weight, improve metabolic health, reduce inflammation, and enhance cellular repair processes, which remove damaged cells that could potentially turn cancerous.

However, other studies warn that the benefits of intermittent fasting are the same as what can be achieved through calorie restriction, and that there isn't enough evidence to confirm it reduces cancer risk in humans.

What about in people with cancer?

In studies of people who have cancer, fasting has been reported to protect against the side effects of chemotherapy and improve the effectiveness of cancer treatments, while decreasing damage to healthy cells.

Prolonged fasting in some patients who have cancer has been shown to be safe and may potentially be able to decrease tumor growth.

On the other hand, some experts advise caution. Studies in mice show intermittent fasting could weaken the immune system and make the body less able to fight infection, potentially leading to worse health outcomes in people who are unwell. However, there is currently no evidence that fasting increases the risk of bacterial infections in humans.

So is it OK to try intermittent fasting?

The current view on intermittent fasting is that it can be beneficial, but experts agree more research is needed. Short-term benefits such as weight loss and better overall health are well supported. But we don't fully understand the long-term effects, especially when it comes to cancer risk and other immune-related issues.

Since there are many different methods of intermittent fasting and people react to them differently, it's hard to give advice that works for everyone. And because most people who participated in the studies were overweight, or had diabetes or other health problems, we don't know how the results apply to the broader population.

For healthy people, intermittent fasting is generally considered safe. But it's not suitable for everyone, particularly those with certain medical

conditions, pregnant or breastfeeding women, and people with a history of eating disorders. So consult your health-care provider before starting any fasting program.

More information: Shinya Imada et al, Short-term post-fast refeeding enhances intestinal stemness via polyamines, *Nature* (2024). DOI: 10.1038/s41586-024-07840-z