Genetic predisposition to increased weight is protective for breast and prostate cancer

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Although a recent campaign by Cancer Research UK emphasized obesity as a risk factor for cancer on par with smoking, the scientific literature on the relationship between increased weight and cancer risk is not so

clear. In a new analysis, researchers from Brunel University London found that increasing weight is causally protective for breast and prostate cancer. Hasnat Amin, BSc, a doctoral student at Brunel University London, presented the results of the study at the American Society of Human Genetics 2020 Virtual Meeting.

Most studies of the impact of obesity on cancer risk are observational. To distinguish causation from correlation, Mr. Amin and his colleagues used an epidemiological technique known as Mendelian randomization. Using data from the UK Biobank, they compared rates of cancer between people who are genetically predisposed to be heavier and people who are genetically predisposed to be lighter. This allowed the researchers to estimate a causal association between increased weight and cancer risk independent of any confounding variables.

The researchers found that although heavier women have an increased risk of breast cancer, women who are genetically predisposed to being heavier are less likely to develop breast cancer. This disparity suggests the increased incidence of breast cancer in heavier women is likely due to additional differences between the two groups. Mr. Amin and his colleagues plan on investigating what these differences might be in the future.

Heavier men were less likely to develop prostate cancer compared to those who were lighter, both observationally and when using genetically predicted measures.

Interestingly, this effect is significantly stronger in men who are exposed to carcinogenic substances at work, supporting the hypothesis that fat cells play a role in absorbing and safely storing harmful chemicals.

Although the findings show that genetic predisposition to increased weight is protective against breast and prostate cancer, Mr. Amin says

further research is needed to work out exactly how this protection is conferred, especially in breast cancer.

"It's first necessary to figure out the mechanisms through which obesity may protect against or be a risk factor for cancer," says Mr. Amin. "The next step would be to use these mechanisms to maximize the protective effect of obesity on breast and prostate cancer risk without the often reported negative effects of increased weight on cardiometabolic health."

Mr. Amin emphasizes that he and his colleagues are not saying that maintaining a caloric surplus is a cancer prevention strategy. Instead, he says public health messages should target the negative consequences of obesity while also accounting for the positive aspects.

"Public health campaigns frequently describe obesity as being a causal risk factor for cancer and, therefore, portray weight loss as an effective cancer prevention strategy," he says. "However, our findings contradict this idea.

"Furthermore, there may even be certain risks in advising fat loss if, for example, if fat cells are involved in the absorption of carcinogenic substances."

Provided by American Society of Human Genetics