

## Low-carbohydrate diets emphasise healthy, plant-based sources associated with slower long-term weight gain

01 January 2024 | News

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Low-carbohydrate diets comprised mostly of plant-based proteins and fats with healthy carbohydrates such as whole grains were associated with slower long-term weight gain than low-carbohydrate diets comprised mostly of animal proteins and fats with unhealthy carbohydrates like refined starches, according to a new study led by Harvard T.H. Chan School of Public Health.

The study was published on December 27, 2023, in JAMA Network Open.

“Our study goes beyond the simple question of, ‘To carb or not to carb?’” said lead author Binkai Liu, research assistant in the Department of Nutrition. “It dissects the low-carbohydrate diet and provides a nuanced look at how the composition of these diets can affect health over years, not just weeks or months.”

While many studies have shown the benefits of cutting carbohydrates for short-term weight loss, little research has been conducted on low-carbohydrate diets’ effect on long-term weight maintenance and the role of food group quality.

Using data from the Nurses’ Health Study, Nurses’ Health Study II, and Health Professionals Follow-up Study, the researchers analysed the diets and weights of 123,332 healthy adults from as early as 1986 to as recently as 2018. Each participant provided self-reports of their diets and weights every four years. The researchers scored participants’ diets based on how well they adhered to five categories of low-carbohydrate diet: total low-carbohydrate diet (TLCD), emphasising overall lower carbohydrate intake; animal-based low-carbohydrate diet (ALCD), emphasising animal-based proteins and fats; vegetable-based low-carbohydrate diet (VLCD), emphasising plant-based proteins and fats; healthy low-carbohydrate diet (HLCD), emphasising plant-based proteins, healthy fats, and fewer refined carbohydrates; and unhealthy low-

carbohydrate diet (ULCD), emphasizing animal-based proteins, unhealthy fats, and carbohydrates coming from unhealthy sources such as processed bread and cereals.

The study found that diets comprised of plant-based proteins, fats, and healthy carbohydrates were significantly associated with slower long-term weight gain. Participants who increased their adherence to TLCD, ALCD, and ULCD on average gained more weight compared to those who increased their adherence to HLCD over time. These associations were most pronounced among participants who were younger (Less than 55 years old), overweight or obese, and/or less physically active. The results for the vegetable-based low carbohydrate diet were more ambiguous: Data from the Nurses' Health Study II showed an association between higher VLCD scores and less weight gain over time, while data around VLCD scores from the Nurses' Health Study and Health Professionals Follow-up Study were more mixed.

“The key takeaway here is that not all low-carbohydrate diets are created equal when it comes to managing weight in the long-term,” said senior author Qi Sun, associate professor in the Department of Nutrition. “Our findings could shake up the way we think about popular low-carbohydrate diets and suggest that public health initiatives should continue to promote dietary patterns that emphasise healthful foods like whole grains, fruits, vegetables, and low-fat dairy products.”