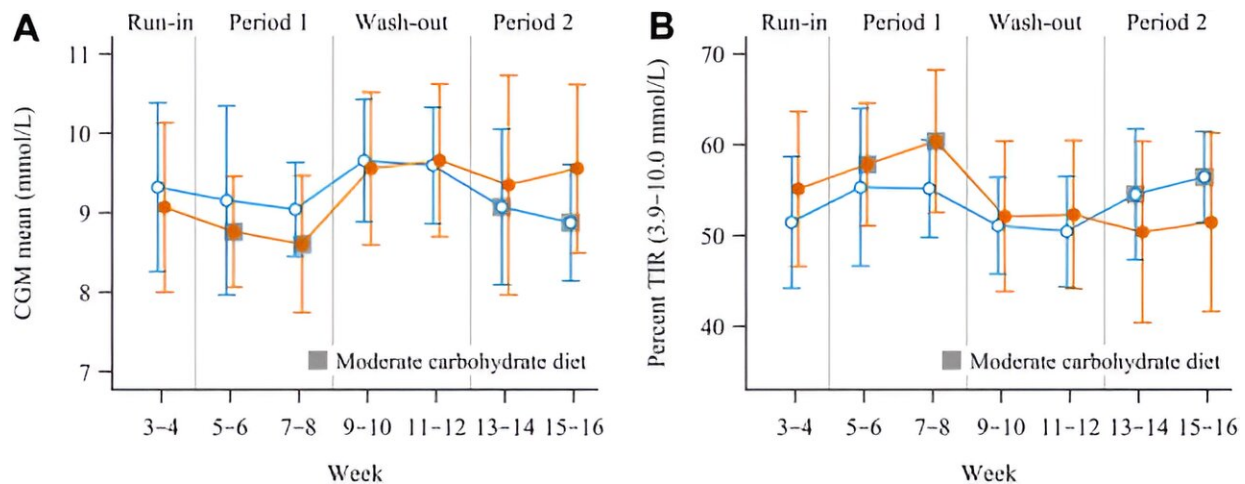


Moderate low-carbohydrate diet found to be beneficial for adults with type 1 diabetes

December 20 2023



Mean glucose (A) and percent time in range, 3.9–10.0 mmol/L (B) during the study period. Orange lines and orange filled markers: received moderate carbohydrate diet in the first period and traditional diet in the second period. Blue lines and white-filled markers: received traditional diet in the first period and moderate carbohydrate diet in the second period. Points and error bars represent means with 95% confidence intervals per two-week period. Credit: *The Lancet Regional Health - Europe* (2023). DOI: 10.1016/j.lanepe.2023.100799

A moderate low-carbohydrate diet for adults with type 1 diabetes has advantages over traditional diet. The average blood sugar level is reduced and the time with good values during a 24 hour period is increased, without any negative health impact. This has been shown in a study

carried out at the University of Gothenburg.

The study [published](#) in *The Lancet Regional Health—Europe* is the largest of its kind to date. Participants were for different periods randomly assigned in a crossover manner to eat a [traditional diet](#) with 50% of the energy from carbohydrates, or a moderate [low-carbohydrate diet](#) with 30% of the energy from carbohydrates.

This is a moderate reduction in carbohydrates, with 24-hour monitoring of all participants via continuous glucose monitoring (CGM). Blood glucose levels were recorded at least every 15 minutes during the 16 weeks of the study, and were followed up by a dietitian and diabetes nurse.

The researchers emphasize that for [safety reasons](#), major changes in [carbohydrate](#) intake in type 1 diabetes should always be made in consultation with the [health care provider](#). Individuals should not make these dietary changes on their own, especially not for children with type 1 diabetes. The current study concerns only adults.

Benefits of a moderate low-carbohydrate diet

The 50 participants all had type 1 diabetes with elevated mean glucose, long-term blood sugar, and injection therapy with insulin or an insulin pump. Half were women, half men. The average age was 48 years.

Both diets tested were healthy in terms of fat and carbohydrate quality. They included vegetables, fiber-rich carbohydrate sources, unsaturated fats, nuts, seeds and legumes, and were individualized by a dietitian.

Participants on a moderate low-carbohydrate diet were found to spend more time in what is known as the target range, the range within which people with type 1 diabetes should be in terms of glucose levels. The

increase in time within the target range was an average of 68 minutes per day compared to the traditional diet, while the time with elevated values was reduced by 85 minutes per day. Overall clinical important changes.

The first author of the study is Sofia Sterner Isaksson, a doctoral student at the Sahlgrenska Academy at the University of Gothenburg and a dietitian in the NU Hospital Group.

"The study shows that a moderate low-carbohydrate diet lowers the average blood sugar level and that more patients can keep their [blood sugar](#) within the target range, which is considered beneficial in reducing the risk of organ damage for people with type 1 diabetes," she says.

No adverse effects of the diet

The researchers saw no evidence of adverse effects. Cholesterol and blood pressure levels were similar for both diets, and participants also felt a bit more satisfied with the moderate low-carbohydrate diet. It has been discussed whether a form of acids, ketones, can become too high when carbohydrates are reduced in type 1 diabetes, but these were also kept at reasonable levels.

"A moderate low-carbohydrate diet can be a good treatment option for adults with type 1 diabetes with elevated glucose levels. However, it is important that the diet is healthy with a particular focus on fat and carbohydrate quality, and that the amount of carbohydrates is not too low so it can be considered safe. Health care providers should therefore offer help and monitoring of the diet," says Sofia Sterner Isaksson.

Responsible for the study is Marcus Lind, professor of diabetology at the University of Gothenburg and senior physician at the research units for diabetes at Sahlgrenska University Hospital and the NU Hospital Group.

"All patients should find the diet that suits them, in consultation with their [health care professionals](#), but there has been a lack of sufficiently large studies randomizing participants to different experimental treatments of this kind. It is therefore important that we can present data showing that a moderate low-carbohydrate [diet](#) is effective and safe for adults with type 1 [diabetes](#)," he says.

More information: Sofia Sterner Isaksson et al, The effect of carbohydrate intake on glycaemic control in individuals with type 1 diabetes: a randomised, open-label, crossover trial, *The Lancet Regional Health—Europe* (2023). [DOI: 10.1016/j.lanepe.2023.100799](https://doi.org/10.1016/j.lanepe.2023.100799)

Provided by University of Gothenburg

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