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ORIGINAL RESEARCH

Dietary carbohydrate restriction as a first-line approach in diabetes management: critical review and evidence base - Review of the evidence

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ONLINE ARTICLE

ARTICLE INFORMATION

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1. ABSTRACT

The study analyzed is a critical review proposing carbohydrate restriction as a first-line nutritional approach for type 2 diabetes and as an adjunct to pharmacological therapy for type 1 diabetes. Only the abstract is available in the provided material: the authors report that reducing dietary carbohydrates reliably lowers elevated glycemia and may allow for the reduction or elimination of certain medications, but no selection criteria, total number of studies, or quantitative results are reported.In section 1.3 of “The Choice to Live in Health or Illness” by Dr. A. Colonnese and R. Panzironi, the publication contributes primarily to the narrative that low carb diets can reduce glycemia in diabetes. Randomized trials and independent meta-analysis show an average improvement in glycemic control, especially in the first few months, and, in some studies, a reduced need for medication. However, the evidence does not demonstrate that such diets directly reduce cardiovascular events, nor that the glycemic benefit persists uniformly in the long term.

MISSION

LIFE Science Hub – Journal of Science was founded with the aim of making scientific knowledge accessible without giving up methodological rigour, quality of sources and authoritativeness of content. The journal promotes the dissemination of knowledge in the health, nutrition, medical and longevity sciences, building a bridge between the world of research and society.

Through articles, reviews, in-depth analyses and expert contributions, the Journal champions evidence-based medicine and science, fostering a correct interpretation of scientific data and countering misinformation. Every piece of content is developed with the aim of translating the complexity of research into understandable, useful and applicable information, while keeping intact the principles of accuracy, transparency and scientific independence.

Free from political, industrial and commercial influence, the journal stands as an authoritative and independent editorial space, dedicated to promoting scientific culture, professional development and the growth of health awareness among the public.

2. ANALYZED STUDY

The research question was whether reducing dietary carbohydrates should be considered a priority approach in the management of diabetes, particularly type 2 diabetes. The authors' hypothesis was that limiting the nutrient that most directly contributes to the rise in glycemia after meals could lower blood glucose, reduce the need for medication, and promote weight control.The relevance to paragraph 1.3 is precise but limited. The publication is consistent with the book's statement regarding the potential benefits of low carb diets on glycemia in diabetes and metabolic syndrome. However, based solely on the available abstract, it does not support the historical data suggesting that the caloric intake from carbohydrates increased from 42% to 49% in men and from 45% to 52% in women between 1974 and 2000: this data is not reported in the available material.As a critical review, the study analyzed is not a single experiment on patients assigned to a diet. It can synthesize and interpret previous results, but it cannot, on its own, prove that one diet is superior for every person, that it prevents cardiovascular events, or that the observed effects depend exclusively on the reduction of carbohydrates rather than also on weight loss, food quality, clinical support, medication, and adherence.

3. MATERIALS AND METHODS OF THE ORIGINAL STUDY

The available material consists exclusively of the publication's abstract. The authors describe the work as a critical review based on twelve points of evidence in favor of carbohydrate restriction in diabetes. The stated objective was to re-examine dietary recommendations in light of the results reported for low carb diets.The bibliographic search strategy, the databases consulted, the search period, the inclusion and exclusion criteria for studies, the number of publications evaluated, the methodological quality assessment procedure, any statistical synthesis or meta-analysis methods, and a table of results for individual studies are not reported in the available material. Furthermore, a unique population, a control group, or a follow-up are not reported, as the work is not presented in the abstract as a primary clinical trial.The abstract states that the benefits of carbohydrate restriction on glycemia are immediate and well-documented and that a reduction in medication may occur. However, without the full text, it is not possible to determine how the authors defined a low carb diet, which studies they considered most reliable, or what weight they attributed to favorable and unfavorable results.

4. RESULTS

In the abstract, the authors report that dietary carbohydrate restriction reliably reduces hyperglycemia, i.e., the presence of glucose in the blood above desirable levels. They also report that this effect does not necessarily require weight loss, while maintaining that such an approach would also be useful for losing weight. The abstract also indicates a possible reduction or elimination of antidiabetic drugs.These results are described in a narrative form and are not accompanied, in the available material, by absolute values for glycemia, glycated hemoglobin, weight loss, number of discontinued drugs, P-values, or confidence intervals. Glycated hemoglobin, often abbreviated as HbA1c, is an indicator that roughly reflects the average glycemia of the last two or three months. No quantitative information is provided regarding insulin sensitivity, i.e., the body's ability to respond to insulin.The result most relevant to the book is therefore qualitative: the publication maintains that decreasing carbohydrates can lower glycemia in people with diabetes. The available material does not directly document a reduction in cardiovascular risk. Consequently, it is not possible to attribute to the analyzed study a demonstration of fewer heart attacks, strokes, or cardiovascular deaths.

5. INTERPRETATION

In simple terms, eating fewer available carbohydrates can reduce the amount of glucose that quickly enters the blood after meals. For a person with type 2 diabetes, this can make it easier to control glycemia and may require a timely reassessment of medications, especially those that can cause hypoglycemia, i.e., an excessive drop in blood glucose.The segment of the book's narrative actually supported by the publication subject to the Evidence Review is: lower dietary carbohydrate intake lower post-meal glycemic exposure possible reduction in glycemia and medication requirements. The work does not

demonstrate the entire narrative chain proposed in the paragraph, which links historical dietary changes, the increase in diabetes, insulin sensitivity, and cardiovascular risk.The biologically plausible conclusion is that carbohydrate restriction can improve glycemic control in a portion of people with type 2 diabetes. The broader interpretation, according to which it always represents the first therapeutic approach or directly reduces cardiovascular risk, requires more robust comparative evidence and, above all, studies with cardiovascular clinical outcomes, not just biomarkers such as triglycerides, cholesterol, or HbA1c.

6. INDEPENDENT CONFIRMING EVIDENCE

A meta-analysis of randomized trials, which are studies in which participants are randomly assigned to different interventions, evaluated low or very low carb diets in adults with type 2 diabetes. At six months, these diets increased the likelihood of diabetes remission without medication compared to control diets and improved average glycemia; however, the authors noted that at twelve months, the effect on remission was reduced and less certain. This evidence confirms the section of the book regarding glycemic improvement, but indicates that the duration of the benefit is not equally demonstrated [1].A small twelve-month randomized trial compared 16 adults assigned to a very low carb ketogenic diet with 18 adults assigned to a moderate carb, low-calorie, and low-fat diet. In the lower carb group, HbA1c decreased from 6.6% to 6.1%, while in the other group it decreased from 6.9% to 6.7%; the difference between groups favored the very low carb diet. The experimental group also lost more weight and discontinued certain medications more frequently. The small sample size and the behavioral intervention associated with the diet limit the ability to separate the effect of carbohydrates alone from the other elements of the program [2].A non-randomized controlled study followed 262 adults with type 2 diabetes for one year who were enrolled in a continuous care program that combined carbohydrate restriction, remote monitoring, and clinical medication management; 87 people received usual care. In the intensive program, HbA1c decreased from 7.6% to 6.3%, and the use of medications other than metformin dropped from 56.9% to 29.7%. Triglycerides decreased by 24% and HDL cholesterol, often called “good” cholesterol, increased by 18%; at the same time, LDL cholesterol increased by 10%. The study confirms that a structured program including carbohydrate restriction can improve glycemia and medication use, but it does not allow for attributing all effects to the diet nor for inferring a reduction in cardiovascular risk [3].

7. CONFLICTING EVIDENCE

A systematic review and meta-analysis of 25 randomized trials involving 2,132 participants with type 2 diabetes found that, when considering all definitions of carbohydrate restriction together, there was no statistically significant reduction in HbA1c compared to control diets: weighted mean difference –0.09%, 95% confidence interval from –0.27 to 0.08; P=0.30. This result does not rule out benefits under specific conditions, but it shows that the average effect is not uniform [4].In the same analysis, diets containing 50-130 grams of carbohydrates per day showed an HbA1c reduction of –0.49% in trials lasting up to six months. The discrepancy therefore depends on duration, diet definition, adherence, and the characteristics of the comparison. The available evidence suggests a clearer glycemic advantage in the short term, but does not demonstrate with equal certainty a persistent effect in all participants or a direct lowering of cardiovascular risk. No sufficiently relevant directly conflicting evidence was identified regarding the possibility of reducing cardiovascular risk with clinical events, because the studies considered were not primarily designed to measure heart attacks, strokes, or cardiovascular mortality.

8. QUADRO COMPARATIVO E SINTESI DELLE EVIDENZE

The table distinguishes the publication subject to the Evidence Review from the independent research used to confirm or define the passage in the book.

Quadro comparativo

Reference	Study type	Population or model	Main result	Direction of evidence	Strength of evidence
Original study	Critical review	Diabetes literature; criteria and sample size not reported in available material	Argues that carbohydrate restriction reduces elevated glycemia and may reduce medication use.	biologically consistent evidence	preliminary
[1]	Systematic review and meta-analysis of randomized trials	Adults with type 2 diabetes	Benefits for remission and glycemic control more evident at six months; results less certain at twelve months.	direct confirmation	moderate
[2]	RCT	34 overweight or obese adults with type 2 diabetes or prediabetes	At twelve months, HbA1c, weight, and use of certain medications decreased more with a very low carb diet.	direct confirmation	moderate
[3]	Non-randomized controlled study	349 adults with type 2 diabetes	In the program with carbohydrate restriction and continuous care, HbA1c, weight, and medication use decreased; LDL increased by 10%.	indirect confirmation	moderate
[4]	Systematic review and meta-analysis of randomized trials	2,132 participants with type 2 diabetes	No overall average effect on HbA1c; benefit in 50-130 g/day diets up to six months.	conflicting evidence	moderate

9. SINTESI EDITORIALE E CONCLUSIONI

CONCLUSIONS

The publication discussed in the article is consistent with the passage in the book that attributes to low carb diets the potential to reduce glycemia in diabetes. Independent evidence makes this claim moderately supported, particularly in the short term and when the diet is accompanied by clinical monitoring and medication adjustment.

However, it is not possible to conclude that this approach necessarily improves insulin sensitivity in every patient, that it maintains the same effect in the long term, or that it directly lowers cardiovascular risk. Dietary choices in diabetes require personalization, overall nutritional quality, and medical supervision, especially when taking medications that reduce glycemia.

Aggiornato al 17/11/2026. Questo contenuto riflette una sintesi divulgativa delle evidenze scientifiche al momento della pubblicazione e non sostituisce il parere medico.

10. TRANSPARENCY AND SCIENTIFIC RESPONSIBILITY

Artificial Intelligence was used solely as a tool for editorial and documentary support. All content, interpretations, bibliographic citations and conclusions have been verified, reviewed and approved by the author, who assumes full scientific responsibility for them.

The manuscript was also subjected to independent peer review prior to publication.

To ensure the greatest transparency, the complete history of the article, including the dates of submission, revision, acceptance and publication, as well as information on the peer review process, is available on the dedicated Article History page.

11. RIFERIMENTI BIBLIOGRAFICI

[1] **Efficacy and safety of low and very low carbohydrate diets for type 2 diabetes remission: systematic review and meta-analysis of published and unpublished randomized trial data**
Goldenberg et al., 2021
BMJ
DOI: https://doi.org/10.1136/bmj.m4743

[2] **Twelve-month outcomes of a randomized trial of a moderate-carbohydrate versus very low-carbohydrate diet in overweight adults with type 2 diabetes mellitus or prediabetes**
Saslow et al., 2017
Nutrition & Diabetes
DOI: https://doi.org/10.1038/s41387-017-0006-9

[3] **Effectiveness and Safety of a Novel Care Model for the Management of Type 2 Diabetes at 1 Year: An Open-Label, Non-Randomized, Controlled Study**
Hallberg et al., 2018
Diabetes Therapy
DOI: https://doi.org/10.1007/s13300-018-0373-9

[4] **Carbohydrate restriction for glycaemic control in Type 2 diabetes: a systematic review and meta analysis**
McArdle et al., 2019
Diabetic Medicine
DOI: https://doi.org/10.1111/dme.13862