Low-carbohydrate vs low-fat diets for the secondary prevention of cardiovascular diseases. *A meta-analysis*

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The scientific evidence surrounding the efficacy of low-carbohydrate diets (LCDs) compared to low-fat diets (LFDs) in the secondary prevention of cardiometabolic diseases is diverse. While some studies indicate that LCDs can lead to superior cardiometabolic outcomes[1], others conclude that higher intakes of MUFA, or PUFA could have a better impact on the risk of CVD[2]. However, despite inconclusive findings, only a limited number of reviews have employed precise meta-analytical methods and used the most recent scientific evidence to derive quantitative estimates of the relative effect of these two diets.

This study aims to exploit the advantages of meta-analysis to compare the efficacy of LCDs (CHO <30% of total energy intake) and LFDs (FAT <35% of total energy intake) against cardiovascular diseases (CVDs), based on the most recent scientific evidence.

A systematic review was performed by retrieving studies from 5 bibliographic databases from January 2013 to 31 May 2023. The studied population included adults at high risk for CVDs, and the outcomes covered indicators for glycemic control, adiposity, lipidemia, and inflammation. Data were extracted in a pre-defined template and a meta-analysis was performed, along with sensitivity analyses. This abstract provides a preliminary analysis of outcomes from a subset of identified studies, focusing on two specific parameters, including triacylglycerols (TGs) and Body Mass Index (BMI).

Six studies (769 subjects) were included in the meta-analysis. Overall, participants in the LCD had on average 0.30 mmol/L lower TG levels at the end of the intervention (95% CI: −0.43; −0.17) whilst for participants in the LFD the magnitude of the effect was smaller (i.e., −0.22 (−0.36; −0.08) mmol/L). However, we found no evidence of a significant impact of the LCD on TG levels against the LFD (change in mean difference (95% CI): −0.096 (−0.245; 0.053) mmol/L), whilst study heterogeneity was moderate ($I^2 = 56\%$). Moreover, participants in the LCD achieved a reduction in BMI of -2.04 kg/m^2 on average (95% CI: -2.77; -1.31), whilst those in LFD achieved on average a reduction of -1.20 kg/m^2 in BMI (95% CI: -1.95; −0.44), with the reduction in BMI being greater for participants in the LCD compared to the LFD (−0.47 kg/m^2 (−0.91; −0.04), $I^2 = 12\%$).

The findings of this pairwise meta-analysis underscore the complex interplay between dietary composition and metabolic outcomes and will provide the best practices for the risk reduction of developing CVDs.

References

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2. Ma Y, Zheng Z, Zhuang L *et al.* (2024) *Nutrients* **16**(1), 152.