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

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INTRODUCTION

- ✓ Scientific evidence on the efficacy of low-carbohydrate diets (LCDs) compared to low-fat diets (LFDs) in the secondary prevention of cardiometabolic diseases (CVDs) is diverse (1).
- ✓ Only a limited number of reviews have employed precise meta-analytical methods with the most recent scientific evidence to derive quantitative estimates of the relative effect of these two diets (2).
- ✓ This study aims to compare the efficacy of LCDs (CHO <30% energy intake, EI) and LFDs (FAT <35% EI) against cardiovascular diseases (CVDs), based on the most recent scientific evidence.

METHODS (PROSPERO ID: CRD42023427216)

Population: Adults at increased risk of CVDs
Intervention: Any dietary pattern intervention
Comparator: No intervention or regular diet
Outcomes: Cardiometabolic outcomes
Study design: RCTs, prospective, case-control
Timeframe: 2013-2023
Language: English

This abstract provides a **preliminary analysis** from a subset of 5 eligible RCTs, focused on ***triacylglycerols (TGs) and Body Mass Index (BMI)***.

RESULTS

Overall, participants in LCDs had on average 0.30 mmol/L lower TG levels at the end of the intervention (95% CI: -0.43; -0.17), while participants in LFDs had a smaller magnitude of the effect (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 diff. (95% CI): -0.10 (-0.25; 0.05) mmol/L) (Figure 2). For participants in LCDs, BMI decreased by 2.04 kg/m2 on average (95% CI: -2.77; -1.31), whilst BMI for those in LFDs decreased by 1.20 kg/m2 on average (95% CI: -1.95; -0.44), with ***the reduction in BMI being greater for participants in the LCD compared to the LFD*** (-0.47 (-0.91; -0.04) kg/m2) (Figure 3).

CONCLUSION

In this meta-analysis, we observed that, at the end of the intervention, participants following LCDs had about 0.5kg/m2 lower BMI, equivalent to approximately 1.5kg, compared to LFDs, aligning with other meta-analyses (3). While the exact mechanism remains unclear, one potential explanation is the carbohydrate-insulin model, suggesting that LCDs are effective primarily because they lower insulin levels, a key hormone associated with an anabolic, fat-storing state (4). For TGS, no significant results were found, with findings being diverse in the literature (4,5), indicating the need for a more in-depth analysis.

Figure 1. PRISMA Flowchart

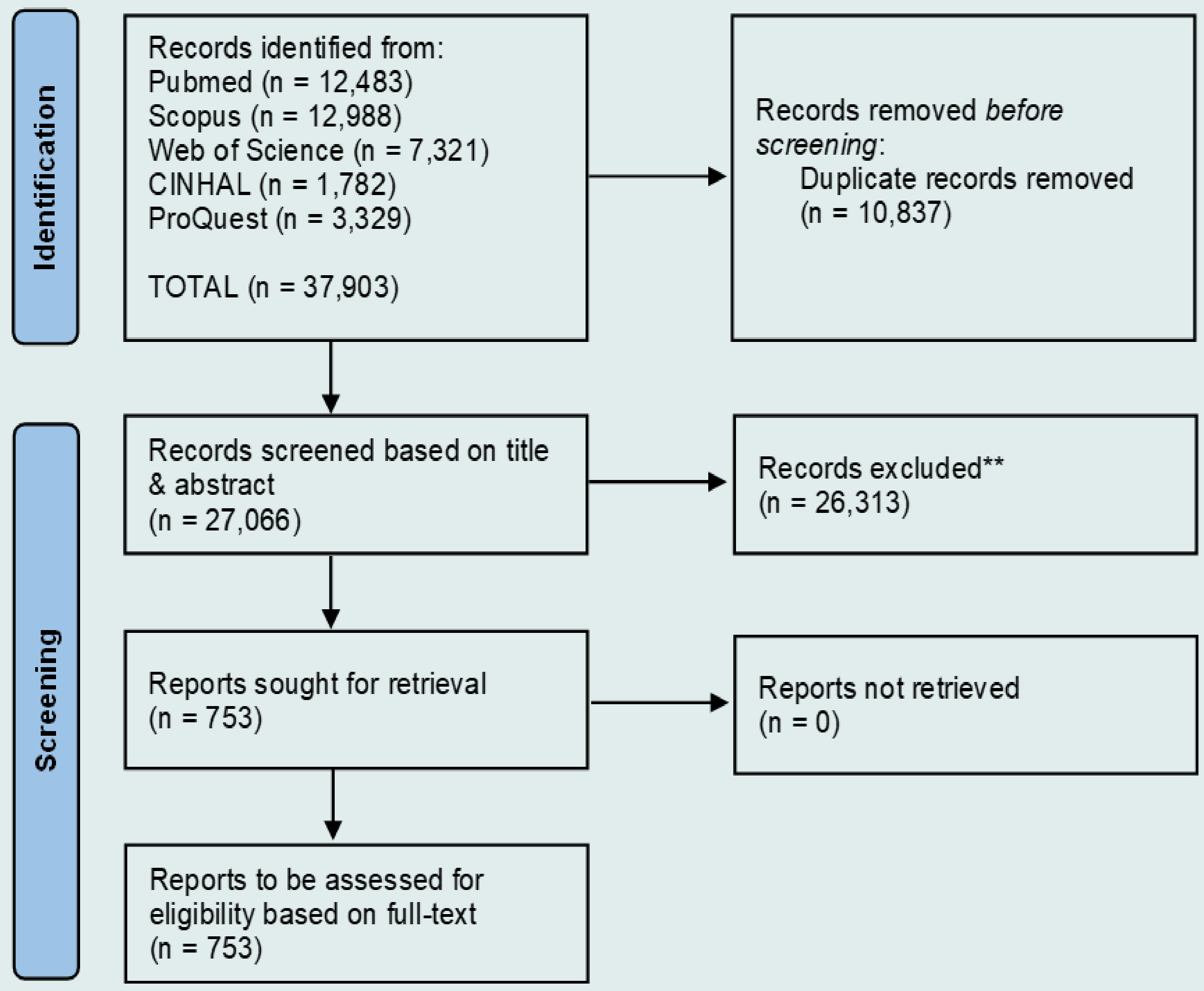


Figure 2. Forest plot for TGs

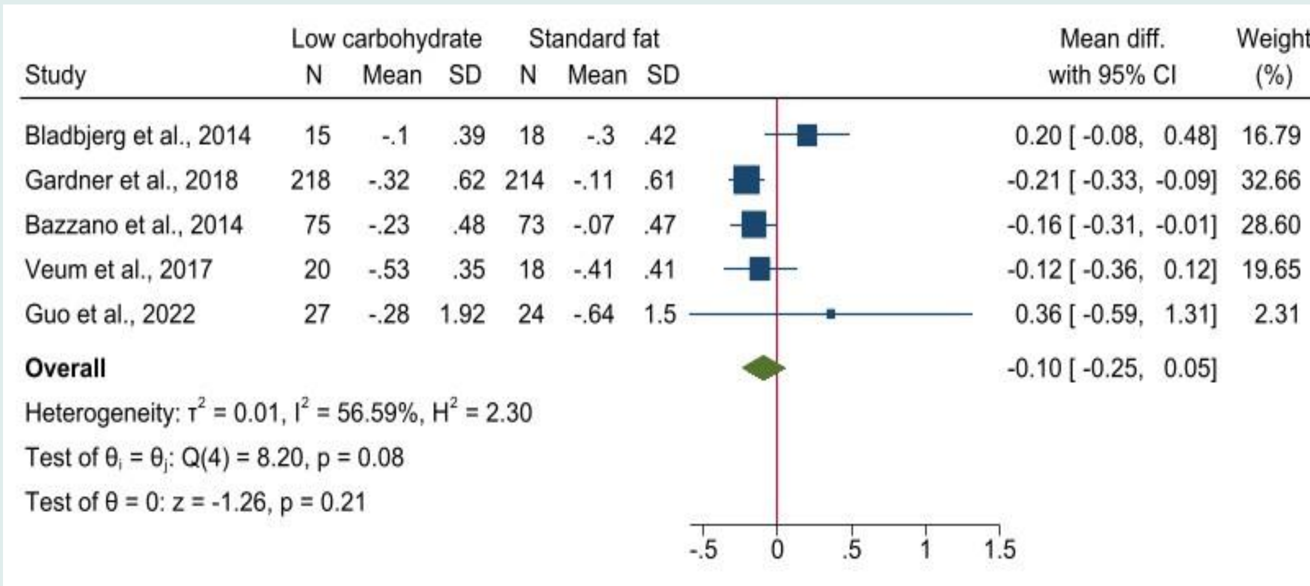
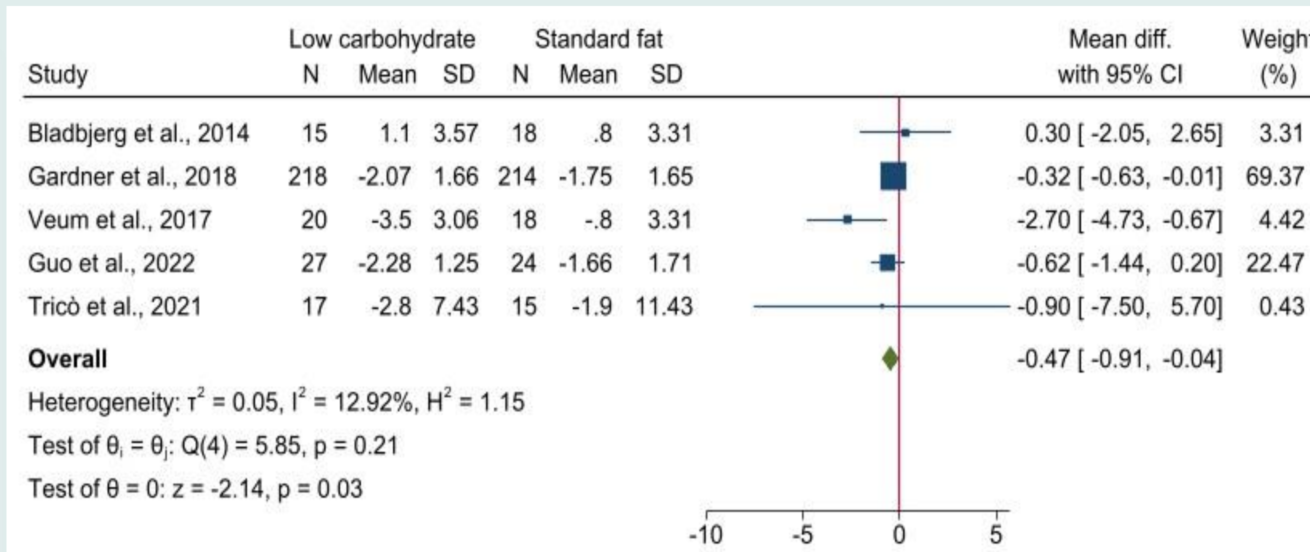


Figure 3. Forest plot for BMI



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