

Weight Reduction Following Low-Carbohydrate Diets Compared to Low-Fat Diets

A Systematic Review and Quality Assessment of Published Meta-Analyses

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Introduction & Scope

- Low-carbohydrate diets (LCD) are increasingly used for weight management.
- Randomised controlled trials (RCT) and meta-analyses have been conducted to assess the effectiveness of LCD compared to conventional low-fat diets (LFD), but vary in terms of:
 - Methodology (e.g. definition of LCD)
 - Review quality
 - Conclusions
- **AIM: to document differences in methods, review quality, and weight loss outcomes of the published meta-analyses.**

Methods

- Search: Web of Knowledge, Medline, EMBASE, Cochrane Database of Systematic Reviews – from their inception to October 2017.
- 2 reviewers selected & extracted data independently.
- 197 records identified, after duplicates removal → 39 full-text screened.
- Methodological quality was assessed using the AMSTAR-2.
- 10 meta-analyses met the inclusion criteria: Meta-analyses of the RCTs comparing LCD vs. LFD in adults with obesity, and reporting mean differences in weight loss outcome between the two diets.
- 1/10 meta-analyses reported adverse effects of LCDs including constipation, headache, halitosis, muscle cramp and general weakness.

Results

- 4** meta-analyses included LCD with carbohydrates (CHO) <60g or contributing toward <20% energy per day
- 5** included LCD with CHO <120 g/day or up to 45% energy per day
- 1** did not define LCD other than as defined by the RCTs' authors

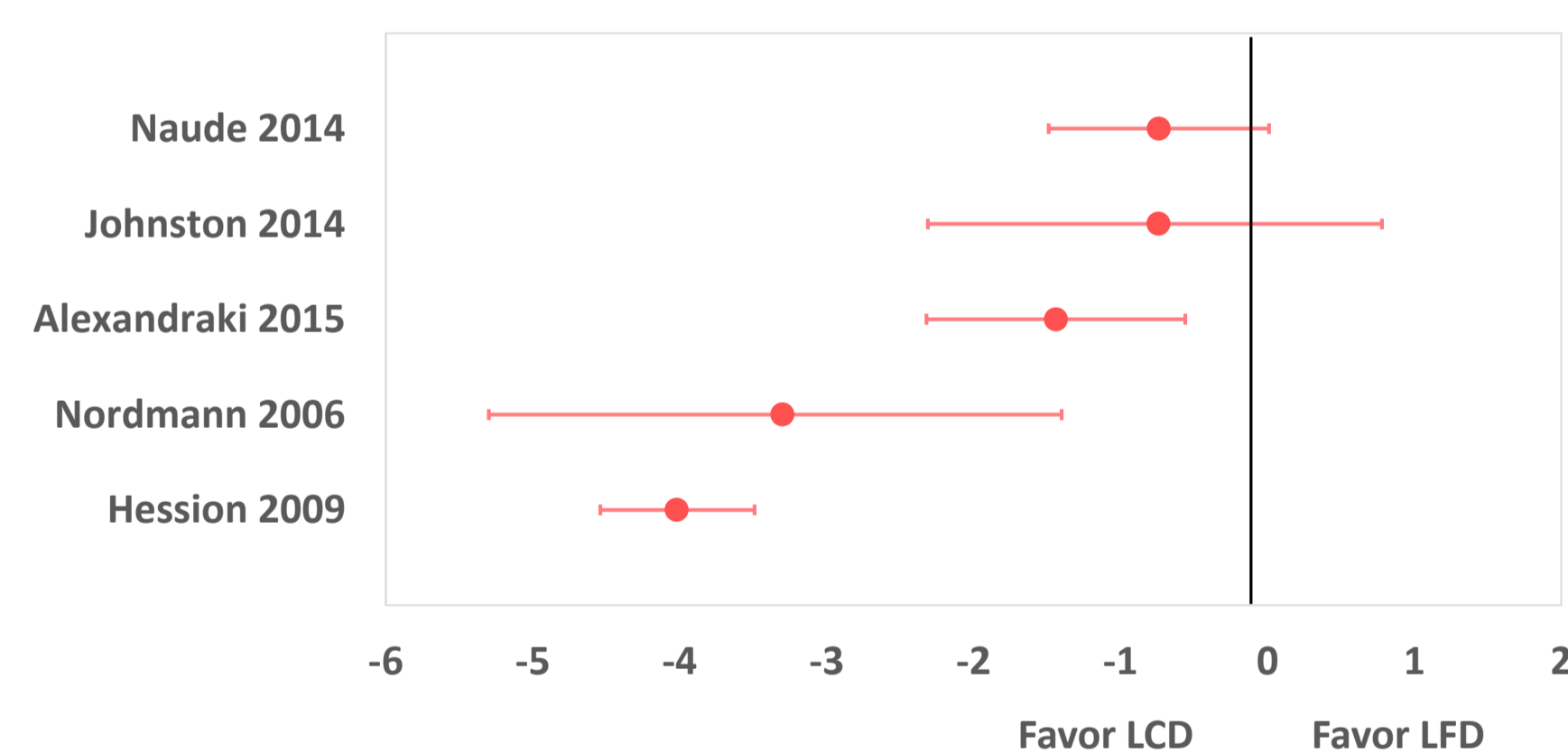
10
Meta-analyses

8/10 meta-analyses had LOW to MODERATE methodological quality.

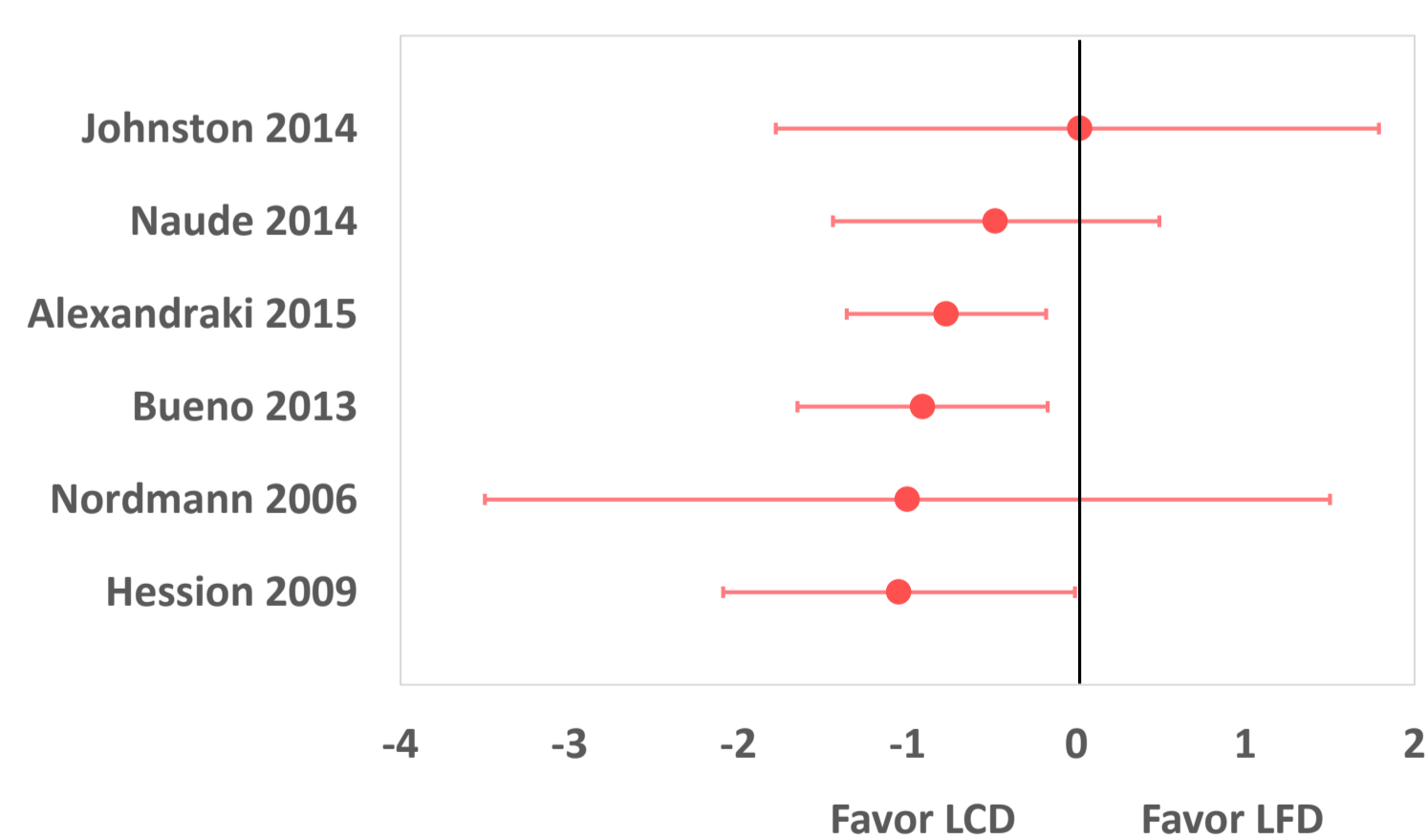
Low quality was due to lack of assessment of the risk of bias (RoB) and impact of RoB on the pooled results, and lack of appraisal of the drivers of heterogeneity.

WEIGHT LOSS (kg)

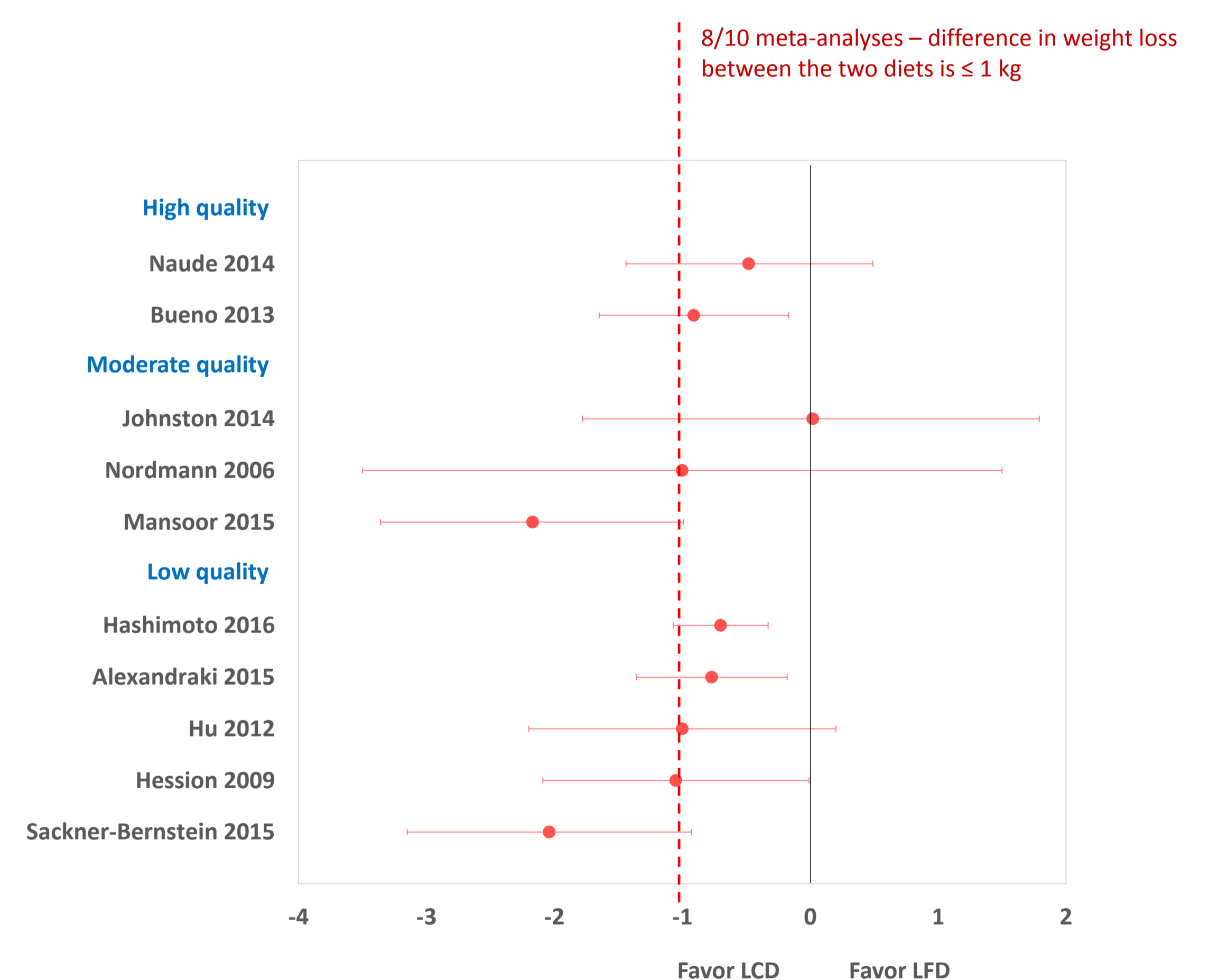
6 months



12 months



by quality*



* Data is mean differences in weight loss between LCD vs LFD at 12 months or the latest follow-up.

Conclusion

- Published meta-analyses have substantial variation in methods and quality.
- Most meta-analyses are of rather low methodological quality and reporting of adverse effects is scarce.
- To aid decision making, better quality reviews with reporting of the adverse effects and other potential harms such on as micronutrient status are needed.

Acknowledgement



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