Quantity of Carbohydrate in Type 2 Diabetes: Systematic Review & Meta-Analysis (797-P)

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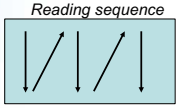

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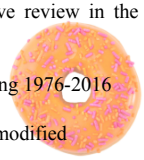
1.0 Introduction

What is the optimal quantity of carbohydrate in type 2 diabetes for glycaemic control (HbA1c)? This review incorporates studies over the longest time period and with the widest range of carbohydrate levels. It aims to be the most comprehensive review in the field.



- 1,158 articles in searches spanning 1976-2016
- 24 met inclusion criteria.
- Meta-analysis favoured neither modified carbohydrate or control diets
- Sub-group analysis of 4 low carbohydrate diets showed a small but significant effect on HbA1c.

2.0 Background

Low- or High-Carbohydrate? Quantity of carbohydrate in the diet for people with type 2 diabetes remains the subject of debate. Other reviews have considered the binary options of low- or high-carbohydrate diets[1-3]. This false dichotomy has been hampered by variations in the definition of a LCD and poor levels of diet adherence in many studies.

	Carbohydrate g per day	Carbohydrate % of energy*
Very low carbohydrate	20-50g	6-10%
Low carbohydrate	<130g	<26%
Moderate carbohydrate	130-225g	26-45%
High carbohydrate	>225g	>45%

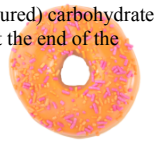
Table 1: Definitions of levels of carbohydrate intake[4]
**Based on a 2,000kcal diet*

3.0 Methods

Searches were performed using Medline, Embase, and CINAHL from inception to June 2016. Databases of ongoing trials, The Cochrane Library and DARE, dissertations & theses and other grey literature were searched. More details can be found in the review protocol, published on PROPSERO[5].

Inclusion criteria:

- Adults diagnosed with type 2 diabetes.
- Minimum intervention duration of 8 weeks and outcomes reporting at a minimum of 12 weeks.
- HbA1c is the principal outcome measure.
- Intervention includes advice to modify the proportion or absolute amount of dietary carbohydrate.
- Actual (self-reported or measured) carbohydrate intake is reported during or at the end of the intervention.



4.1 Results - Meta-Analyses

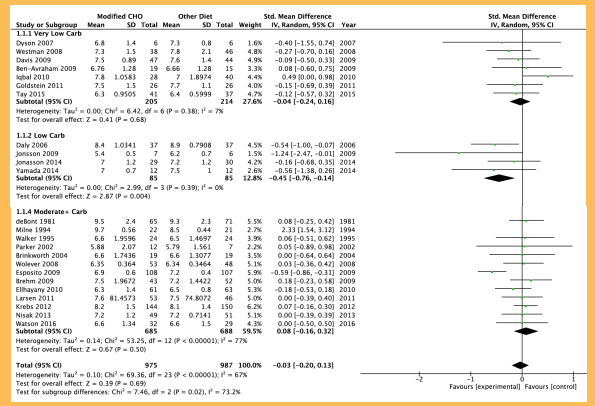


Figure 1: Forest Plot of Meta-Analysis

4.0 Results

The overall effect of modifying the quantity of carbohydrate showed no effect on HbA1c in the meta-analyses (see Figure 1) WMD -0.03, [95% CI 0.20, 0.13].

Sub-group analyses were performed according to the levels of carbohydrate in Table 1. Very Low Carbohydrate diets (<50g per day) and Moderate (or higher) Carbohydrate diets showed no effect, but a modest effect was seen in the Low Carbohydrate group, as shown in the forest plot (Figure 1).

5.0 Conclusion

Several reviews, including this one, suggest conflicting results for the superiority of a particular level of carbohydrate intake for people with type 2 diabetes. Health professionals advising people with type 2 diabetes about their diet should focus their advice on helping patients to determine the level of carbohydrate that is most beneficial to each patient, based on individual blood glucose response, culture, lifestyle, preference, and whilst paying attention to overall dietary quality, rather than macronutrient proportions.

References

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