

Exploring the impact of a low carbohydrate breakfast on *ad libitum* dietary patterns in adults with type 2 diabetes

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Lower carbohydrate diets are an effective tool for managing hyperglycaemia in type 2 diabetes (T2D); however, strict lower carbohydrate diets can be difficult for some people to maintain long term. Interest in low carbohydrate dietary patterns and their effectiveness among those with T2D⁽¹⁾ is therefore becoming an increasing area of interest. The aim of this study was to explore the impact of consuming a breakfast low in carbohydrates on *ad libitum* dietary patterns across the rest of the day during a 12-week intervention in adults with T2D. A two-site randomised controlled trial (RCT) recruited adults with physician diagnosed T2D > 12 months (age 67.5 ± 7.7 years; BMI 30.2 ± 5.9 kg/m²) on < two oral glucose lowering agents across Canada and Australia. Participants were randomised into low carbohydrate (LC) breakfast (< 10% CHO:65–75% FAT:15–30% PRO) or calorie-matched standard care low fat control (CTL) breakfast (45–75% CHO:20–40% FAT:15–25% PRO) for 12 weeks. They were provided with eight to 10 breakfast recipes that were site specific but matched in macronutrient composition. No other dietary advice was given for other daily meals. Food diaries were kept for three days (two weekdays, one weekend) during weeks 1, 6 and 12. Compliance to breakfasts was recorded using daily photos uploaded to RedCap. Secondary data analyses from the RCT were completed from food diaries of 77 participants (*n* = 31 Australia site (13 LC and 18 CTL) and *n* = 46 Canada site (22 LC and 24 CTL)). Compliance to prescribed breakfast meals was high (90% CTL; 88% LC), with no significant difference between groups. The LC arm consumed an average of 9 g of carbohydrate at breakfast compared to 53 g control (*p* < 0.01) with total overall daily carbohydrate intake significantly lower in the LC group 131 ± 52 g v. CTL 198 ± 56.53 g (*p* < 0.01). Overall, those in the LC arm consumed less energy across the day compared to the CTL (6865 ± 2032 kJ v. 7706 ± 1855 kJ, *p* < 0.000). Snacks provided more energy from CHO than any other free-living meal (snacks: 53%; lunch: 43%, dinner: 38%), with the LC group consuming less carbohydrates as snacks compared to the control (37 ± 26 g v. 47 ± 35 g). Skipping snacks was more common in Canada (*n* = 17) compared to Australia (*n* = 2), evenly distributed between LC and CTL arms. These findings suggest that consuming a breakfast low in carbohydrates does not lead to compensatory overeating of carbohydrates or energy across the rest of the day. A LC breakfast may reduce total energy intake in adults with T2D, however future research is needed to determine whether this corresponds to improved weight management and glycaemic control over the long term.

Reference

1. Chang C, Francois ME & Little J (2019) *Am J Clin Nutr* **109**, 1302–1309.