Curing Diabetes

People who followed a low-carb diet had remission of diabetes

Diabetes (Type 2) is often thought to be a lifetime diagnosis. But does it have to be? Type 2 diabetes develops when cells become insulin resistant and eventually progresses to the point that excess glucose can no longer be taken up by the cells so it builds up in the bloodstream causing diabetes. Carbohydrate restriction with moderate protein intake and healthy fats has been used to manage diabetes since the 1700s. With modern pharmaceuticals, management of nutrition often falls by the wayside. Many dieticians often tell diabetics to eat higher carbohydrate snacks and to eat carbs with every meal but to closely monitor fat intake. Is this the correct advice? Advances in medications (like insulin) have revolutionized diabetes treatment, but what about a cure?

A recent meta-analysis in The BMJ suggests that people who followed a low-carb nutrition plan for six months were more likely to experience remission of their diabetes than those following a standard nutrition plan. This study reviewed 23 studies involving over 1300 subjects and found that low-carb diets led to weight loss, reduced medication use, and improved triglyceride levels. This study divided low-carb diets into two groups; one group consumed less than 10% of their calories as carbohydrate (<50 gm/day) which is a ketogenic level, and the other group ate less than 26% of their calories as carbohydrate (<130 gm/day). They found patients on low-carb diets had higher diabetes remission rates at 6 months when compared to usual recommendations (45-50% carb/low-fat diet) without adverse consequences.

Abstract

- **Objective** To determine the efficacy and safety of low carbohydrate diets (LCDs) and very low carbohydrate diets (VLCDs) for people with type 2 diabetes.
- **Design** Systematic review and meta-analysis.
- **Data sources** Searches of CENTRAL, Medline, Embase, CINAHL, CAB, and grey literature sources from inception to 25 August 2020.
- **Study selection** Randomized clinical trials evaluating LCDs (<130 g/day or <26% of a 2000 kcal/day diet) and VLCDs (<10% calories from carbohydrates) for at least 12 weeks in adults with type 2 diabetes were eligible.
- **Data extraction** Primary outcomes were remission of diabetes (HbA_{1c} <6.5% or fasting glucose <7.0 mmol/L, with or without the use of diabetes medication), weight loss, HbA_{1c}, fasting glucose, and adverse events. Secondary outcomes included health related quality of life and biochemical laboratory data. All articles and outcomes were independently screened, extracted, and assessed for risk of bias and GRADE certainty of evidence at six and 12 month follow-up. Risk estimates and 95% confidence intervals were calculated using random effects meta-analysis. Outcomes were assessed according to a priori determined minimal important differences to determine clinical importance, and heterogeneity was investigated on the basis of risk of bias and seven a priori subgroups. Any subgroup effects with a statistically significant test of interaction were subjected to a five point credibility checklist.
- **Results** Searches identified 14 759 citations yielding 23 trials (1357 participants), and 40.6% of outcomes were judged to be at low risk of bias. At six months, compared with control diets, LCDs achieved higher rates of diabetes remission (defined as HbA_{1c} <6.5%) (76/133 (57%) *v* 41/131 (31%); risk difference 0.32, 95% confidence interval 0.17 to 0.47; 8 studies, n=264, I^2=58%). Conversely, smaller, non-significant effect sizes occurred when a remission definition of HbA_{1c} <6.5% without medication was used. Subgroup assessments determined as meeting credibility criteria indicated that remission with LCDs markedly decreased in studies that included patients using insulin. At 12 months, data on remission were sparse, ranging from a small effect to a trivial increased risk of diabetes. Large clinically important improvements were seen in weight loss, triglycerides, and insulin sensitivity at six months, which diminished at 12 months. On the basis of subgroup assessments deemed credible, VLCDs were less effective than less restrictive LCDs for weight loss at six months. However, this effect

was explained by diet adherence. That is, among highly adherent patients on VLCDs, a clinically important reduction in weight was seen compared with studies with less adherent patients on VLCDs. Participants experienced no significant difference in quality of life at six months but did experience clinically important, but not statistically significant, worsening of quality of life and low density lipoprotein cholesterol at 12 months. Otherwise, no significant or clinically important between group differences were found in terms of adverse events or blood lipids at six and 12 months.

- **Conclusions** On the basis of moderate to low certainty evidence, patients adhering to an LCD for six months may experience remission of diabetes without adverse consequences. Limitations include continued debate around what constitutes remission of diabetes, as well as the efficacy, safety, and dietary satisfaction of longer term LCDs.

Low carb diets are often thought to only be useful for weight loss. They emphasize non-starchy vegetables, proteins like poultry, fish, eggs, meat, and nuts, fats (olive oil, butter, full-fat dairy), and restrict grains, starches, and sugars. This study sought to find out if low-carb nutrition is beneficial for diabetes. The answer is a resounding yes! Compared to the low-fat diet typically recommended, there was a 32% increase in remission of diabetes.

This analysis pooled very low carb diets (VLCD: < 50 gm daily - ketogenic) with low-carb diets (<130 gm daily). An interesting part of the analysis found that there was more weight loss in the low-carb group than in the VLCD group. This is likely due to adherence because they found that people who were strict with the VLCD had good weight loss, but maintaining a strict ketogenic diet is difficult. They found that triglyceride levels dropped significantly which is an important risk factor for cardiovascular disease. There was a trend toward higher LDL cholesterol levels. In my experience when advanced cholesterol testing is performed on people with this finding the number of small, dangerous LDL particles drops dramatically so I am not overly concerned with this finding.

Most of my patients know that I favor a lower-carb nutrition plan. We are all somewhat insulin resistant and need to avoid moving in the direction of diabetes. As we age, I have found that we need to dial back the carbohydrate intake. In general, a level of < 130 gm daily should be adequate to maintain weight and insulin sensitivity in most people and is usually fairly easy to follow. Some people will need to tighten things up further for results but keeping our intake of sugar and processed starch low is good for all of us. Note that there is no calorie counting in this nutrition plan.

This is a nice summary of low-carb nutrition. Scroll to page 14 to get the basics, guidelines, and FAQ.

Any major change in dietary intake for diabetics should be undertaken under the supervision of your physician or nutritionist. Starting a low-carb nutrition plan can dramatically lower your needs for medications, especially insulin and some oral medications. It is important to monitor blood glucose levels carefully especially in the early stages of dietary changes.

Goldenberg, Joshua z., et al (2021). Efficacy and Safety of Low and Very Low Carbohydrate Diets for Type 2 Diabetes Remission: Systematic Review and Meta-Analysis of Published and Unpublished Randomized Trial Data.