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What is the Role of Carbohydrate-Restricted Diets for Patients with Obesity-Related Diseases (Hyperlipidemia, Diabetes, Hypertension, etc)?

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What is the role of carbohydrate-restricted diets for patients with obesity-related diseases (hyperlipidemia, diabetes, hypertension, etc)?

Evidence-Based Answer

Compared with low-fat diets, carbohydrate-restricted diets (eg, Atkins) produce more weight loss in the short term (at 6 months but not at 1 year) and produce a greater reduction in glycosylated hemoglobin (HbA1C). (SOR **A**, based on a meta-analysis.) However, no studies have been published with more than 1 year duration or have focused on patient-oriented outcomes. The American Diabetes Association now recommends either low-carbohydrate or low-fat calorie-restricted diets for weight loss over the short term. (SOR **C**, based on expert opinion.)

We identified 1 meta-analysis of randomized controlled trials (RCTs) of low-carbohydrate versus low-fat or Mediterranean diets, in which 5 RCTs (n=447) with 6 to 12 months' follow-up were examined.[1] They defined a low-carbohydrate diet as less than 60 g carbohydrates daily or ≤10% of daily energy consumption, which they then compared with low-fat diets, defined as total fat of less than 30% of daily energy intake. After 6 months, participants on low-carbohydrate diets exhibited more weight loss compared with participants on low-fat diets (weighted mean difference 3.3 kg; 95% confidence interval [CI], –5.3 to –1.4 kg). At 12 months, the difference was no longer significant (weighted mean difference 1.0 kg; 95% CI, –3.5 to 1.5 kg).

This meta-analysis also examined diet completion, HbA1C, glucose, and insulin levels. Participants following the low-carbohydrate diet were more likely than participants following the low-fat diet to stick with their diet early on (70% vs 58%, respectively; odds ratio [OR] 1.8; 95% CI, 1.2–2.6 at 6 months). After 1 year, no significant difference was noted in adherence (62% vs 54%; OR 1.4; 95% CI, 0.9–2.3), but a statistically significant decrease in HbA1C was noted (–0.7%±1.0% vs –0.1%±1.6%; *P*=.02) at 12 months. Fasting glucose values were lowered more efficiently in individuals following the low-carbohydrate diet than the low-fat diet after 6 months (–10.8±23.4 mg/dL vs –1.8±21.6 mg/dL; *P*=.02), but the effect was no longer detectable after 12 months. There was no difference in insulin levels between the 2 groups after 12 months. However, due to the short nature of the study, the authors would not recommend low-carbohydrate diets for weight loss or reduction of obesity risk factors.

An earlier systematic review of low-carbohydrate diets examined 94 studies; only 5 lasted for longer than 90 days, and none had comparison groups.[2] This review showed that weight loss on carbohydrate-restricted diets was associated with longer diet duration (*P*=.002) and better restriction of caloric intake (*P*=.03). Weight loss was not associated with reduced carbohydrate content (*P*=.90). The authors of this study concluded that participant weight loss while using low-carbohydrate diets was principally associated with decreased caloric intake and increased diet duration, but the evidence was not sufficient to recommend for or against low-carbohydrate diets.

On review of the current literature, the American Diabetes Association's most recent position statement is that low-carbohydrate or low-fat calorie-restricted diets may be effective in the short term up to 1 year for weight loss—an A recommendation. They do not, however, recommend low-carbohydrate diets for prevention or treatment of diabetes.[3]

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2. Bravata DM, Sanders L, Huang J, et al. Efficacy and safety of low-carbohydrate diets: a systematic review. *JAMA* 2003; 289:1837–1850. **[LOE 1a]**
3. American Diabetes Association, Bantle JP, Wylie-Rosett J, Albright AL, et al. Nutrition recommendations and interventions for diabetes: a position statement of the American Diabetes Association. *Diabetes Care* 2008; 31(suppl 1):S61–S78. **[LOE 2c]**