Ketogenic diet for weight loss

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Clinical question
Is the ketogenic diet effective for weight loss?

Bottom line
Ketogenic diets can help patients lose about 2 kg more than low-fat diets do at 1 year, but higher-quality studies show no difference. Weight loss peaks at about 5 months but is often not sustained. Individual weight change can vary from losing 30 kg to gaining 10 kg with any diet.

Evidence
• In a systematic review of 13 RCTs of ketogenic versus low-fat diets (N = 1577, 61% women, BMI 30 to 43 kg/m²), those on ketogenic diets lost 0.9 kg more than those on low-fat diets at 12 to 24 months (statistically different).1
• There were statistically significant but likely clinically meaningless changes in surrogate markers.
• The dropout rate was 13% to 84% across studies.
• A systematic review of 11 RCTs (N = 1369, 71% women, BMI 30 to 36 kg/m²) found at 6 to 24 months2 that the ketogenic diet group lost 2.2 kg more than the low-fat diet group (statistically different but results were inconsistent). Higher-quality studies showed no difference.
• Surrogate marker changes were similar to those above.1,2
• Other systematic reviews (5 to 24 RCTs) were confounded by low-carbohydrate diets that were likely not ketogenic. Results ranged from no difference3-5 to a 3.6-kg loss.5-8
• No systematic reviews or RCTs examined mortality or cardiovascular disease.2
• An RCT (N = 609) found weight loss at 1 year for low-carbohydrate diets (<20 g/d to start) of 6.0 kg compared with 5.3 kg for low-fat diets (not statistically different).9
• -Patient genotypes (favouring 1 diet type) had no effect.
• -Weight change varied from losing 30 kg to gaining 10 kg in either group.

Context
• A typical Canadian diet contains 48% carbohydrates, 32% fat, and 17% protein.10
• Most ketogenic diets start with carbohydrate restriction of less than 20 to 50 g/d (10% of energy intake) for about 2 months before slow reintroduction.1,11
• Weight loss peaks at about 5 months, then weight is slowly regained.12
• Ketogenic diets tend to decrease caloric intake.9,12
• Observational data suggest long-term low carbohydrate intake might be associated with increased mortality.13

Implementation
Ketogenic diets imply minimizing carbohydrate intake and maximizing protein intake to induce ketosis.12 Adverse effects are common, including constipation (33%), halitosis (30%), muscle cramps (28%) (numbers needed to harm of 3 to 4 compared with low-fat diets), headache, diarrhea, weakness, and rash (numbers needed to harm of 5 to 7).14 Urine ketone monitoring is advocated in the lay press, but it is not consistently reported in RCTs and its benefit is unknown.15

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Competing interests
None declared

The opinions expressed in Tools for Practice article are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

References

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