

Atkins and the new diet revolution: is it really time for regimen change?

Weight loss occurs in the short term, but not enough is known to recommend long term use

After health professionals have promoted a low fat, high carbohydrate model of eating for more than 20 years, the prevalence of overweight and obesity in Australia (as elsewhere) has climbed.¹ Very few people are able to attain and maintain a truly low fat eating plan, but that has not stopped the low fat orthodoxy being blamed for the obesity epidemic.² Yet, it is not sufficient to focus on a single aspect of diet — low fat diets are not intrinsically “healthy”, especially if they contain high levels of simple sugars, low levels of complex carbohydrates and are nutrient poor.

In contrast to the low fat, high carbohydrate diet, a popular approach to weight loss is the Atkins diet,³ a “controlled carbohydrate” dietary regimen. One of the many reasons for its popularity is that, as society has become increasingly concerned about body image and weight, the Atkins regimen promises quick weight loss without hunger, allows a wide range of foods and has simple “rules”. All this is supported by consumer “how-to” books, celebrity endorsement, and food product innovation and marketing.

The Atkins diet — “kerbing the carbs”

Atkins’ theory rests on a belief that a high intake of refined carbohydrate, especially simple sugars, causes overstimulation of insulin and results in uncontrolled hunger and eating, while the excess insulin also favours fat storage. Thus, the Atkins diet relies primarily on controlling carbohydrate intake and progresses through four phases. The strict induction phase, intended to produce ketosis, allows only 20 g of carbohydrate a day for a minimum of 2 weeks. Fruit, bread, grains, starchy vegetables or dairy products other than cheese, cream or butter are eliminated. Sugar and alcohol are not allowed, and caffeine is discouraged. Mineral and vitamin supplementation, dietary fibre, and eight glasses of water a day are recommended. During this restrictive phase, weight loss is rapid. While this initial weight loss may be due in part to water loss as body glycogen stores are depleted, low carbohydrate diets also result in a reduced caloric intake.⁴⁻⁷ Factors contributing to the lower caloric intake may be the satiating effect of a high protein diet, a lower absolute fat intake due to restricted food choice, and possibly appetite suppression due to ketosis.⁸⁻¹⁰ However, the exact mechanisms of the weight loss are as yet unknown.¹⁰ The second and third phases of the diet allow a gradual liberalisation of food intake by an incremental increase in total carbohydrate: fruits, nuts, more vegetables and some cereal foods are added. The final, maintenance phase is intended to be permanent, and aims to keep daily dietary carbohydrate intake to a known (relatively low) amount.

Does the Atkins diet work?

If weight loss is the goal, the answer appears to be a qualified “yes”. For obese people, it works a little better than a low fat diet over 6 months. Recently, four randomised controlled trials in obese men and women (two lasting 6 months, two lasting 12 months) compared a low carbohydrate diet to a conventional low fat weight-loss diet.^{5-7,11} Although the studies differed in design and had different subjects, in each study the weight loss at 6 months

was 4–6 kg greater for the low carbohydrate group than for the low fat group. However, the weight loss difference between groups at 12 months was no longer statistically significant.^{6,11} The dropout rates in all of the trials were high (21%–43%), with a general non-significant tendency for better retention in the low carbohydrate group. So, in the long term, low carbohydrate diets do not necessarily offer better weight control than lower fat, higher carbohydrate diets.

Is the Atkins diet safe?

During weight loss, a low carbohydrate regimen appears to have no adverse effects on cardiovascular risk factors such as serum lipid levels (total and low-density lipoprotein cholesterol) or blood pressure, or on fasting glucose and fasting insulin levels.^{6,7} In fact, randomised controlled trials comparing a low carbohydrate diet with a low fat diet up to 12 months consistently indicate a beneficial effect on serum triglyceride and high-density lipoprotein cholesterol concentrations. However, the low carbohydrate regimen is associated with a greater incidence of constipation, headache, halitosis, muscle cramps, diarrhoea, general weakness and rash.⁵ Strictly limiting carbohydrates could also reduce intake of plant-based foods rich in phytochemicals, bioflavonoids, carotenoids and other micronutrients now regarded as important in a healthy diet.¹² The regimen developed by Atkins³ encourages fruit and vegetable intake, and minimally processed food, so a low carbohydrate diet should not necessarily imply an intake low in fibre and low in plant-based food. Low carbohydrate diets may also be beneficial by removing simple sugars and sugary foods, including fructose sweeteners, which could be responsible for excess energy intake.⁸

Overall, however, the safety of low carbohydrate diets beyond 12 months is largely unknown, and there is speculation that the regimen may have adverse health implications for cardiovascular disease, renal function (through an observed cross-sectional association of high dietary protein intake with proteinuria) and bone

Advice for patients wanting to follow the Atkins diet

- While low carbohydrate diets appear to work for weight loss in the short term (6 months), not enough is known to recommend them in the long term.
- All weight-reduction diets are difficult to follow over a long period of time and have limited long term success.
- Follow the complete Atkins plan (not only parts of it), including regular physical activity, vitamin and mineral supplementation, a daily fibre supplement, eight glasses of water a day, and minimally processed foods.
- Maintain a high daily intake of fruit and vegetables (at least two serves of fruit and five serves of vegetables from the “allowed” foods) and avoid saturated fats.
- A dietitian can help with your dietary intake plan if you are having difficulties.

health (through relatively low calcium intake and the association of high protein intake with hypercalcinuria).¹³ Information is also lacking on the long term effect of a low carbohydrate regimen for the young, the elderly, people of normal weight (or for people who are not losing weight), and those with chronic conditions, such as diabetes or cardiovascular disease.

As with many dietary regimens, the nutritional quality of low carbohydrate diets varies according to how the dietary rules are applied. The Atkins diet calls for a drastic dietary reduction of foods with a significant starch and sugar content — in doing so, the intake of many energy-dense but micronutrient-poor foods is reduced. There is the potential for these to be replaced with foods that are moderate in energy intake, and rich in fibre and micronutrients. However, in any regimen to reduce or control weight, particular attention should be given to ensuring that the reduced food intake is of high nutritional quality. A sensible way to follow an Atkins diet is to include plenty of the allowed fruits and vegetables, and to prefer food sources of unsaturated fat over those with saturated fat.

Malcolm D Riley

Head, Nutrition and Dietetics Unit, Department of Medicine
Monash University, Clayton, VIC
Malcolm.riley@med.monash.edu.au

John Coveney

Co-ordinator, Graduate Studies in Primary Health Care
Department of Public Health, Flinders University, Adelaide, SA

- 1 Australian Institute of Health and Welfare. Australia's health 2002. Canberra: AIHW, 2004. (AIHW Catalogue No. AUS-25)
- 2 Goldberg J, Belury M, Elam P, et al. The obesity crisis: don't blame it on the pyramid. *J Am Diet Assoc* 2004; 104: 1141-1147.
- 3 Atkins RC. Dr Atkins new diet revolution. New York: Avon Books, 2002.
- 4 Bravata DM, Sanders L, Huang J, et al. Efficacy and safety of low-carbohydrate diets. *JAMA* 2003; 289: 1837-1850.
- 5 Yancy WS Jr, Olsen MK, Guyton JR, et al. A low-carbohydrate, ketogenic diet versus a low-fat diet to treat obesity and hyperlipidemia. A randomized, controlled trial. *Ann Intern Med* 2004; 140: 69-77.
- 6 Stern L, Iqbal N, Seshadri P, et al. The effects of low-carbohydrate versus conventional weight loss diets in severely obese adults: one-year follow-up of a randomized trial. *Ann Intern Med* 2004; 140: 778-785.
- 7 Brehm BJ, Seeley RJ, Daniels SR, D'Alessio DA. A randomized trial comparing a very low carbohydrate diet and a calorie-restricted low fat diet on body weight and cardiovascular risk factors in healthy women. *J Clin Endocrinol Metab* 2003; 88: 1617-1623.
- 8 Bray G. Low carbohydrate diets and realities of weight loss. *JAMA* 2003; 289: 1853-1855.
- 9 Seshadri P. A calorie by any name is still a calorie. *Arch Intern Med* 2004; 164: 1702-1703.
- 10 Astrup A, Larsen TM, Harper A. Atkins and other low carbohydrate diets: hoax or an effective tool for weight loss? *Lancet* 2004; 364: 897-899.
- 11 Foster GD, Wyatt HR, Hill JO, et al. A randomized trial of a low-carbohydrate diet for obesity. *N Engl J Med* 2003; 348: 2082-2090.
- 12 Ornish D. Was Dr Atkins right? *J Am Diet Assoc* 2004; 104: 537-542.
- 13 National Heart Foundation. Position statement on very low carbohydrate diets. Canberra: NHF, April 2004. Available at: www.heartfoundation.com.au/downloads/Very_low_carb_dietsPP_04.pdf (accessed Oct 2004).

Reprints: Associate Professor Malcolm Riley, Department of Medicine, Monash University, Clayton, VIC 3168. □