

Examining the most popular weight loss diets: How effective are they?

Patients may swear by a particular diet, but the medical evidence gathered so far indicates that for most, keeping lost weight off for at least a year is an elusive goal.

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Overweight and obese are more than just descriptors—these health conditions, in which a person has an excess amount of body fat in relation to lean body mass, are indicators for numerous potential health problems. Whether a person is overweight or obese is determined by calculating the person's body mass index (BMI), which measures weight in relation to height. For adults, a BMI of 25 kg/m² or higher is considered overweight; a BMI of 30 kg/m² or higher is considered obese; and a BMI of 40 kg/m² or higher is considered extremely obese.^{1,2} A BMI table is available from the National Heart, Lung, and Blood Institute at www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm.

Being obese is a risk factor for developing diseases such as hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, sleep apnea, and even certain types of cancers.^{3,4} Thus if obesity affected only a small subset of people, it would still be a public health concern. However, the increase in the number of obese persons in this country over the past 20 years has made obesity an epidemic.^{5,7} According to the most recent CDC data, 30 different states have reported that approximately 25% of their population is obese.⁸

Clinicians witness the obesity problem firsthand. They see the negative self-image, the comorbidities, and the skyrocketing health care costs.⁹ Clinicians may employ a number of methods to address the issue, including recommending that obese patients try any number of diets. While some interventions are scientifically tested, however, many best-selling popular diet plans have evolved with little medical or nutritional basis. Often diets claim that weight loss depends more on the macronutrient composition of the diet than the number of calories consumed.¹⁰

What is clear is that if obese patients lose weight, they decrease both their risk for developing obesity-related diseases and their risk of mortality due to obesity-related complications.⁴ Although no longer in use, the Metropolitan Life tables published in the early 1940s offered the first data to indicate that people with lower body weights also had lower morbidity and mortality rates.¹¹ Since then, many randomized controlled studies have suggested that weight loss reduces the risk of a wide variety of health problems and

directly improves patient health. This article reviews the current literature on best-selling diets to determine which are the most efficacious choices for clinician prescription.

WEIGHT LOSS

Weight loss is achieved by creating a negative energy balance, typically obtained by eating 500 kcal per day less than what is required to maintain current body weight. This energy deficit should lead to a weight loss of 0.45 kg (about 1 lb) per week.¹² *Successful weight loss* is defined as a 5% reduction in initial body weight that has been maintained for at least 1 year.³ Overweight and obese patients have many options for



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achieving weight loss. These therapies include dietary intervention, exercise programs, psychotherapy, pharmacotherapy, and surgery.¹³ This review focuses on three commonly used dietary methods for weight loss: low-carbohydrate, low-fat, and low-calorie diets¹⁴⁻²² (see Table 1).

Best-selling low-carbohydrate diets include the Atkins, Carbohydrate Addict's, Zone, and South Beach diets. Most low-carbohydrate diets restrict caloric intake by reducing the consumption of carbohydrates from 300 g per day to 20 to 60 g per day. This carbohydrate restriction usually causes the liver to convert fat into fatty acids and ketone bodies to be used by the body for energy, a phenomenon known as *ketosis*.²⁰ These programs follow different "phases," allowing differing amounts of carbohydrate intake at the various phases;

“Low-carb diets and other popular diets produced similar weight loss when the diets were followed for longer than 1 year.”

in the weight-maintenance phase of the diets, followers are allowed up to 150 g of carbohydrates per day, which does not induce ketosis in most people.²³ The central rationale of a carbohydrate-restricting diet is that it results in ketosis, promotes lipid oxidation and satiety, and increases energy expenditure—all factors that should promote negative energy balance and weight loss.²⁰

The most popular very-low-fat diets are the Ornish and Pritikin diets. These diets were created to reverse and prevent heart disease. They permit less than 10% of daily calories from fat and encourage consumption of fruits, vegetables, and complex carbohydrates, instead of simple carbohydrates.^{21,22} The Ornish diet is vegetarian, whereas the Pritikin diet allows some low-fat animal products but limits animal protein to only 3.5 oz per day. Both diets rely on complex carbohydrates and fiber to induce satiety. These diets theorize that reducing dietary fat decreases caloric intake, causing a negative energy balance that leads to weight loss.^{21,22}

The most popular low-calorie diets are the programs from Weight Watchers and Jenny Craig. These programs encourage lower caloric intake through portion-control, and they typically provide participants with nutrition and behavioral counseling as well as recommendations for physical activity.^{17,18} Low-calorie foods are endorsed on these plans, with both companies selling their own portion-controlled food products. Participants lose weight by decreasing caloric intake and creating a negative energy balance.

THE EVIDENCE

Low-carbohydrate diets and weight loss

Several trials have reported greater short-term weight loss with low-carbohydrate diets than with low-fat diets, even when energy intake is equal or greater.²⁴⁻³⁰ Additionally, one study indicates that low-carbohydrate diets are effective for long-term weight loss and maintenance.³¹ This latter study by Phelan and colleagues reviewed 3-year changes in weight, diet, and physical activity in 891 subjects listed in the National Weight Control Registry. The participants reported a minimum of 30 lb of weight lost and a minimum of 1 year of weight loss maintenance. There, over the course of 3 years, nearly 11% of low-carbohydrate dieters were able to maintain their weight loss.³¹

Nevertheless, some researchers have challenged the greater effectiveness of low-carbohydrate diets for weight reduction when compared to other diets. Several studies indicate that when dieters followed a diet for longer than 1 year, low-carbohydrate diets and other popular diets produced similar weight loss.^{27,32} Dansinger and Gleason conducted a study of overweight or obese adults following one of four diets: Atkins, Zone, Weight Watchers, or Ornish.³² That study found that all the diets were equally effective in reducing weight at 1 year.³² Additionally, Bravata and colleagues reviewed the efficacy of low-carbohydrate diets and concluded that as with other types of diets, weight loss was caused by decreased energy intake, not decreased carbohydrate intake.³³ In general, research indicates that low-carbohydrate diets may be useful for short-term weight loss, but the health consequences of prolonged ketosis and inconclusive long-term data suggest these diets should not be fol-

KEY POINTS

- Being obese is a risk factor for developing diseases such as hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, stroke, sleep apnea, and even certain types of cancers.
- The increase in the number of obese persons in this country over the past 20 years has made obesity an epidemic. According to the most recent CDC data, 30 different states have reported that approximately 25% of their population is obese.
- No conclusive evidence demonstrates that any popular diet (low-carbohydrate, low-fat, or low-calorie) is superior to another for long-term weight control. Any popular diet that limits energy intake, if followed correctly, will result in weight loss. However, the effects of macronutrient content on long-term adherence to a diet and to weight maintenance are not clear.
- Weight loss, regardless of the diet used to achieve it, is difficult and rarely maintained over the long term. Successful long-term weight loss requires permanent behavioral changes.

COMPETENCIES

●●● Medical knowledge

●●● Interpersonal & communication skills

●●●● Patient care

●●●● Professionalism

●●●●● Practice-based learning and improvement

● Systems-based practice

TABLE 1. Popular weight-loss diets

	Diet philosophy	Foods to eat	Foods to avoid
Atkins ²⁰	<ul style="list-style-type: none"> • Eating too many carbohydrates causes obesity and other health problems. • Ketosis produced by the very low-carbohydrate diet decreases hunger. 	<ul style="list-style-type: none"> • Meat, fish, and poultry • Eggs • Cheese • Vegetables • Butter and oil 	<ul style="list-style-type: none"> • Breads and pasta • Most fruits and vegetables • Milk • Alcoholic beverages
Carbohydrate Addict's ¹⁵	Eating too many carbohydrates causes excess levels of insulin. The rise in insulin causes increased carbohydrate consumption, leading to obesity. Limiting carbohydrates helps break the addiction.	<ul style="list-style-type: none"> • Meat, fish, and poultry • Eggs • Cheese • Vegetables • Butter and oil 	<ul style="list-style-type: none"> • Breads and pasta • Some types of fruits
Zone ¹⁶	Eating the right combination of foods helps the body function at peak performance, leading to decreased hunger, weight loss, and increased energy.	Protein, fat, carbohydrates (must be exact proportions)	<ul style="list-style-type: none"> • Bread and pasta • Some types of fruit • Saturated fats
South Beach ¹⁹	Eating the right carbohydrates, the right fats, and lean protein will help the person to lose weight.	<ul style="list-style-type: none"> • Lean sources of meat, fish, and poultry • Eggs • Complex carbohydrates • Low-carbohydrate fruits and vegetables • Nuts • Vegetable oils 	<ul style="list-style-type: none"> • Bread and pasta • Some types of fruit • Saturated fats
Ornish ²¹	Eating a high-fiber, low-fat vegetarian diet will help with weight loss and improve or prevent heart disease.	<ul style="list-style-type: none"> • Grains • Fruits and vegetables • Beans • Nonfat dairy 	<ul style="list-style-type: none"> • Meats • Oils • Sugars • Alcoholic beverages • Dairy • Avocados • Olives • Nuts
Pritikin ²²	Eating low-fat, low-calorie, plant-based foods will promote weight loss and improve or prevent heart disease.	<ul style="list-style-type: none"> • Lean sources of meat, fish, and poultry • Grains • Fruits and vegetables • Beans • Nonfat dairy 	<ul style="list-style-type: none"> • Oils • Sugars • Alcoholic beverages • Dairy • Avocados • Olives • Nuts
Weight Watchers ¹⁸	<ul style="list-style-type: none"> • Healthy eating decisions and physical activity will lead to weight loss. • A points system for foods is designed to limit calories. 	<ul style="list-style-type: none"> • Lean sources of meat, fish, and poultry • Complex carbohydrates • Fruits and vegetables • Vegetable oils • Low-calorie desserts 	No foods are prohibited. Instead, each food is assigned points, and a certain number of points are allotted each day.
Jenny Craig ¹⁷	Portion control, exercise, and balance will lead to weight loss. Portion-controlled meals are designed to limit calories.	Prepackaged meals based on the USDA food pyramid	No foods are prohibited.

Adapted from Chandler MJ, Hildebrandt LA. Should patients with diabetes follow a low-carb diet? *JAAPA*. 2007;20(10):36-41.

Data from Heller R and Heller R,¹⁵ Sears B,¹⁶ Jenny Craig Weight Loss Program,¹⁷ Weight Watchers,¹⁸ Agaston A,¹⁹ Atkins RC,²⁰ Ornish D,²¹ and Pritikin R.²²

lowed long-term. Further research may clarify the long-term value of these diets.

Low-fat diets and weight loss

Research indicates that low-fat diets are effective for short-term weight loss.³⁴ Systematic reviews suggest that decreasing total energy from fat leads to weight loss for short periods of time.³⁵⁻³⁸ A large study conducted by the National Weight Control Registry, a self-report registry of subjects who have lost a minimum of 13.6 kg and maintained that loss for longer than 1 year, found that participants following a low-fat diet (no more than 25% of calories from fat) reduced their body weight by an average of 29%.³⁹

“Studies have shown that among popular diets, no single choice is clearly superior to any other for long-term weight control.”

A study conducted by the Women’s Health Initiative Randomized Controlled Dietary Modification Trial examined nearly 50,000 women following either a low-fat diet containing high amounts of fruits, vegetables, and whole grains or their usual diet.⁴⁰ The study found that any difference in weight loss between the two groups was insignificant over an average of 7.5 years.⁴⁰ Low-fat diets modestly reduce body weight for short periods of time, but studies longer than 1 year showed that low-fat diets did not improve the ability of subjects to maintain the weight loss over time.⁴¹ Pirozzo and colleagues conducted a systematic review of low-fat diets and concluded that fat-restricted diets are no better than calorie-restricted diets in achieving long-term weight loss in overweight or obese people.⁴²

Thus, low-fat diets appear to be no better than other diets at helping people achieve and maintain a weight loss. However, the evidence does suggest that low-fat diets are typically better in dietary quality because they promote an increased intake of fruits, vegetables, and whole grains,⁴³ and are therefore safe to follow for long periods of time.

Low-calorie diets and weight loss

Low-calorie diets are effective for weight loss in the short term.⁴⁴⁻⁴⁶ A National Institutes of Health review concluded that low-calorie diets lower total body weight by an average of 8% during a period of 3 to 12 months.³ However, little long-term research is available to answer the question of whether this loss is maintained past 1 year. One study included 423 participants following either Weight Watchers or a self-help plan with dietary counseling. The study concluded that dieters following Weight Watchers had lost more weight after 2 years than had those following the self-help plan. Participants in Weight Watchers had lost 5.3% of their

initial body weight at 1 year and had maintained a loss of 3.2% of initial body weight at 2 years, compared with 1.5% and 0%, respectively, among those who followed the self-help plan.⁴⁴ A systemic review by Wing and Hill demonstrated that persons following a low-calorie diet had lost and maintained a loss of only 4% of original body weight over 3 to 4.5 years—less than the 5% weight loss necessary to be considered “successful.”⁴⁷

Overall, low-calorie diets are useful for weight loss in the short term. These diets are generally safe for long-term use if they include fruits, vegetables, whole grains, and lean proteins, which increase these diets’ relative dietary quality.⁴³

CONSIDERATIONS FOR CLINICAL PRACTICE

No conclusive evidence demonstrates that any popular diet is superior to another for long-term weight control.^{48,49} Any popular diet that limits energy intake, if followed correctly, will result in weight loss. These facts are clear: energy deficit leads to weight loss, independent of macronutrient composition, at least in the short-term. What is not clear, however, is the effect of macronutrient content on long-term adherence to a diet and to weight maintenance.

Weight loss, regardless of the diet used to achieve it, is difficult and rarely maintained over the long term. Successful long-term weight loss requires permanent behavioral changes in both lifestyle and eating patterns. Providers can emphasize the health benefits of long-term weight loss while helping patients review their specific needs and priorities. Referring patients to a team of health care professionals who specialize in weight loss, such as registered dietitians and counselors, can provide patients with the necessary tools to begin a safe long-term weight loss program. **JAAPA**

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