A Tale of Two Diets: What Can We Learn From the Diet Wars?

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Abstract

During the last two decades, obesity rates in the United States have escalated dramatically, and intense media coverage of obesity issues has fueled consumer interest in low-carbohydrate diets designed to promote rapid weight loss. The food industry has fostered the assumption that a drop in carbohydrate consumption will translate into a drop in weight. Studies of low-carbohydrate dieters, however, have indicated that weight loss is due primarily to calorie reduction rather than carbohydrate restriction. When low-fat foods were heavily promoted, dieters assumed consumption of reduced-fat or fat-free foods would result in weight loss, unaware that calorie consumption could increase even if fat intake was reduced. This pattern is likely to be repeated if escalating consumption of low-carbohydrate foods translates into increased calorie intake. Once polarized, low-fat and low-carbohydrate advocates, as well as health professionals, have moved toward agreement on a number of critical points designed to promote weight loss as well as to prevent chronic disease. These groups recommend a diet rich in fruits, vegetables, whole grains, low-fat dairy products, lean meats, poultry, and fish. Despite this congruence, the weight loss industry aggressively continues to market new diets, products, and services. Ironically, as the diet business becomes more profitable, obesity rates continue to climb in the United States.

During the last two decades, obesity rates in the United States have escalated dramatically among children, adolescents, and adults. Over two thirds of all adults are overweight and half of these qualify as clinically obese (Mokdad, Serdula, & Dietz, 1999; Hill, Goldberg, Pate, & Peters, 2001). A recent Report on Overweight and Obesity from the Surgeon General's Office noted that 69% of Black women and 58% of Black men were overweight or obese. Among Hispanic adults, the rates are 69% of men and 70% of women. These rates are slightly higher than those in the white population, in which 62% of men and 47% of women are overweight or obese (U.S. Department of Health and Human Services [USDHHS], 2004).

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Obesity is not simply an aesthetic problem, though it may be a source of frustration for many who are concerned about their appearance. Excess weight is a significant risk factor for leading causes of morbidity and mortality in the United States, such as heart disease, stroke, hypertension, diabetes, and cancer (Allison, Fontaine, Manson, Stevens, & Vantalie, 1999). The cost for obesity-related medical treatment, currently estimated at $117 billion, is expected to continue climbing, and it has been suggested that poor diet, combined with physical inactivity, may overtake tobacco as the leading cause of preventable death in the United States (Mokdad, Marks, Stroup, & Gerberding, 2004).

In the last 25 years, the prevalence of overweight has doubled in young children and tripled in adolescents (Ogden, Flegal, Carroll, & Johnson, 2002). Today 15% of children 6-18 exceed the upper limit of healthy weight for their age groups. As with adults, the number is higher among Black and Latino children, averaging 26% (Schmidt, 2003). Overweight children are often stigmatized by peers and suffer from low self-esteem and depression (Davison & Birch, 2001; Eisenberg, Neumark-Sztainer, & Story, 2003; Strauss, 2000; Strauss & Pollack, 2003). In addition, obesity and excess weight in children can lead to a range of debilitating health problems, such as type 2 diabetes, hypertension, and cardiovascular disease. Nearly one million obese American children suffer from metabolic syndrome, a condition that substantially increases their risk of type 2 diabetes and premature heart disease (Cook, Weitzman, Auinger, Nguyen, & Deitz, 2003). Obese children are also more likely to become obese adults, and childhood risk factors are increasingly linked to the incidence of adult disease. Harvard Medical School released a study concluding that prevention of obesity in childhood could have a "lifelong, perhaps multigenerational impact" (Oken & Gillman, 2003, p. 496).

Medical and public health professionals have warned about the growing obesity epidemic for some time. Recent intense media coverage of obesity issues has fueled the already intense public interest in dietary regimens designed to promote easy, rapid, convenient, hunger-free weight loss involving a minimum amount of effort. Unfortunately, many dieters view weight loss as an aesthetic issue and perhaps secondarily as a disease prevention strategy. Many will choose diets that produce quick results but are nutritionally unsound. Media promotion and diet gimmicks drive the problem. A national poll conducted by the Opinion Dynamics Corporation (2004) indicated that 11% of Americans are currently on a rigorous low-carbohydrate diet, and millions more focus on restricting their carbohydrate intake. Twenty percent of the public has tried such a diet in the past two

years, and nearly 20% who are not currently on a low-carbohydrate diet may try one in the next two years.

Low-Carbohydrate Diets

History

Dramatically restricting carbohydrate consumption appeared to be a revolutionary way of losing weight when it was first promoted by Dr. Robert Atkins in 1972. It allowed dieters to eat as much as they wanted, whenever they were hungry, avoiding the gnawing hunger and cravings associated with traditional low-fat, restricted-calorie diets. The only caveat was that carbohydrate consumption was carefully monitored and curtailed. However, Atkins was not the first to promote a low-carbohydrate diet. In the late 19th century, William Banting (1869) encouraged carbohydrate reduction in a book titled *A Letter on Corpulence, Addressed to the Public*. Banting was dismissed as a quack by mainstream nutrition authorities. Atkins' theories were also derided initially, and most health professionals advocated a low-fat diet to reduce weight as well as the risk of heart disease and cancer, the two leading causes of death in the United States.

Although Atkins had advocates for nearly 30 years, it was not until fairly recently that low-carbohydrate diets became ubiquitous. Their popularity was fueled by preliminary research that appeared to contradict long-standing concerns that the fat-laden Atkins diet would cause a potentially dangerous rise in cholesterol levels, increasing the risk of cardiovascular disease among low-carbohydrate dieters (Stern et al., 2004; Yancy, Olsen, Guyton, Bakst, & Westman, 2004).

Premise

Most low-carbohydrate diets are based on same premise; "bad" carbohydrates are to be avoided in the process of losing weight or avoiding weight gain. Diet books like *Dr. Atkins' New Diet Revolution*, *The South Beach Diet*, *The Zone*, and *Good Carbs, Bad Carbs* advocate limiting consumption of "bad" carbohydrates such as refined flours, sugars, and starchy vegetables such as potatoes. The diets are based on the premise that "bad" carbohydrates cause a rapid spike in blood sugar, which raises blood insulin levels. This process causes weight gain by promoting fat storage, increasing hunger by causing a drop in blood sugar, or both. To short circuit this pattern, the low-carbohydrate diets often advocate consumption of protein, fat, and "good" carbohydrates like whole grains and vegetables.

The enthusiasm for low-carbohydrate diets has produced a proliferation of new diet books, food products, specialty foods, and nutritional supplements. As a consequence, the low-carbohydrate phenomenon has become a powerful force in the national economy as well as the national conscience. In just two years, over 1,500 new low-carbohydrate foods and beverages were introduced, and sales of low-carbohydrate products are expected to total $30 billion in 2004. Each carbohydrate-conscious consumer is expected to spend about $85 each month on reduced-carbohydrate foods (Kadlec, 2004). The industry is so strong that it has generated a new trade publication, *LowCarbiz*. Unfortunately, the ubiquity of "low-carb" advertising is encouraging both dieters and non-dieters to eat low-carbohydrate foods, resulting in a nutritional minefield to be navigated by consumers.

Consumer Issues

Marketing of these diets relies heavily on flawed concepts, skillfully manipulated nutritional distortions, and catchy "buzzwords" to attract consumers. A number of new terms and claims may be confusing and deceptive. Among the most pervasive are the terms "low-carbohydrate," "carb-smart," "carb-aware," "impact carb," and "low-carb lifestyle," which imply that eating foods with these labels will reduce carbohydrate consumption. The legality of low-carbohydrate claims is questionable, since the Food and Drug Administration prohibits claims about nutrients that have not been defined. Most manufacturers do not offer comparisons of "regular" and "low-carbohydrate" foods to back up their claims. Many "low-carbohydrate" foods actually do not have fewer carbohydrates than the original food, but they may be promoted as having fewer "net carbs. The term "net carbohydrate" was created by the food industry to define carbohydrates that affect insulin levels. This is a reference to the glycemic index, which is a critical component of several diet books, such as *The Zone*, *Dr. Atkins New Diet Revolution*, *Good Carbs, Bad Carbs*, and *The New Glucose Revolution*. The glycemic index is a ranking of how much and how fast certain "whole" foods increase blood sugar and trigger the production of insulin, which helps supply sugar to cells for energy use. Foods with a high glycemic value are thought to be absorbed faster, resulting in rapid fluctuations in insulin levels. This triggers an energy boost, followed by hunger and fatigue. A growing body of research suggests that diets promoting low glycemic foods not only improve cardiovascular risk factors, but also may help in weight control. In addition, low glycemic foods help to avoid frequent and rapid swings in sugar and insulin levels, which are suspected to lead to insulin resistance and diabetes (Jenkins et al, 2002; Ludwig, 2002).

It is critical to note that research on the glycemic index has been based primarily on the consumption of "whole foods." However, the food industry has extended, manipulated, and in many ways distorted this information in attempting to market processed foods. The number of "net carbs" or "impact carbs" is obtained by subtracting the number of grams of carbohydrate derived from nutrients like sugar alcohols and fiber, alleged to "have a minimal impact on blood sugar," from the total number of carbohydrate grams in a food serving (Atkins, 2002). There is little evidence to support the theory that foods sweetened with sugar alcohols or substitutes do not raise blood sugar. Muffins or cake sweetened with sugar substitutes have been found to raise blood sugar as much as those containing sugar (Foster-Powell, Holt, & Brand-Miller, 2002).

Unfortunately, a rapidly expanding low-carbohydrate industry promotes the assumption that a drop in carbohydrate consumption will translate into a drop in weight. Many foods low in carbohydrate, or "net carbs," are high in both calories and fat, associated with higher risk of heart disease and cancer as well as excess weight (Hu, & Willett, 2002; Lieberman, Prindiville, Weiss, & Willett, 2003). What many dieters fail to realize is that if they consume as many or more calories than they expend, even on a low-carbohydrate diet, they will maintain or gain weight rather than losing it. The few controlled studies of low-carbohydrate dieters have, in fact, indicated that weight loss is due primarily to calorie reduction rather than carbohydrate restriction (Bravata et al., 2003).

The effect on consumer behavior appears to be similar to what happened when low-fat foods were heavily promoted. When extreme fat restriction was advocated, dieters assumed unlimited consumption of reduced-fat or fat-free foods would result in weight loss or prevent weight gain. In the two decades between 1970 and 1990, Americans decreased intake of total fat from about 37% of calories to 34% of calories. However, as consumers indulged in low-fat products the average adult calorie intake increased by about 300 calories during the same time period. Because total calorie consumption increased, fat intake actually increased from 81 grams per day to 83 grams per day, contributing to the nation's collective weight gain during this time period (Briefel & Johnson, 2004). This pattern is likely to be repeated if escalating consumption of low-carbohydrate foods translates into increased calorie intake.

Low-Fat Diets

The most prominent of many low-fat advocates is cardiologist Dean Ornish, Director of the Preventive Medicine Research Institute. Ornish originally supported a very-low-fat diet, which included abundant quantities of fruits, vegetables, and whole grains, and derived 70% to 75% of its calories from carbohydrate (Ornish, 1996). This carbohydrate level was higher than the level recommended by a number of public health organizations, such as the American Heart Association and the National Academy of Sciences. It was thought that too many carbohydrates would raise triglycerides and lower HDL cholesterol.

However, this did not happen when Ornish monitored 35 people on his recommended diet for five years. This diet appeared to achieve an actual reduction in coronary occlusion in people who reduced fat intake to just 10% per day (Ornish et al, 1998). Critics charged that this may have been related to other facets of Ornish's program, such as vigorous exercise, stress reduction, and weight loss, but until Ornish's research was published, reversal of heart disease was only thought possible through surgery. In contrast, proponents of low-carbohydrate diets have not published longitudinal studies showing their long term effects on heart health.

There seems to be little argument that low-carbohydrate diets are effective for fairly rapid weight loss. Experts who evaluated over 35 years of research indexed in MEDLINE found that weight loss while using low-carbohydrate diets was principally associated with decreased calorie intake and duration of the diet but not with reduced carbohydrate intake. No studies have demonstrated that low-carbohydrate diets are safe or effective for use over long periods of time (Blackburn, 2002; Bravata et al., 2003; Foster et al, 2003; Westman & Volek, 2002).

Points of Consensus

Consumers are the ones who benefit least when conflicting theories struggle for public acceptance. Most fad diets rely on gimmicks or "hooks" which may be temporarily appealing but seem, and often are, too good to be true. Many people, however, want practical information that is useful for long-term weight loss and maintenance, which carries aesthetic as well as health benefits. Low-carbohydrate and low-fat regimens would seem to be at opposite ends of the diet spectrum, but even icons like Ornish and the Atkins program are cautiously moving closer to the center, modifying their initial recommendations of over a quarter of a century ago. Ornish (2004) has acknowledged the importance of limiting consumption of refined ("bad") carbohydrates and Atkins advocates have acknowledged the importance of adding fruits and vegetables ("good") carbohydrates to the diet (Atkins, 2002). Most health professionals continue to support the idea that long-term, health-promoting weight loss is most successful when it results from a reduced calorie diet that is low in fat and high in vegetables, fruits, and whole grains. In keeping with this premise, a number of critical points of agreement have emerged among nutrition experts, many of whom recently participated in a national summit on obesity sponsored by the Robert Wood Johnson Foundation (2004). This consensus is supported by the most recent *Dietary Guidelines for Americans* issued by the USDHHS and U.S. Department of Agriculture (USDA) (2005).

1. Consume fewer "bad" carbohydrates with a high content of sugar and refined flour (Atkins, 2002; Ornish, 2004; USDHHS and USDA Press Conference, 2005). These items tend to be low in fiber and high in calories. This means they are absorbed quickly, causing a rapid rise in blood sugar and accompanying insulin spike, which may promote weight gain.

2. Consume more "good" carbohydrates like fruits, vegetables, legumes, and whole grains. Their high fiber content promotes satiety, helping to control appetite. They are also rich in micronutrients that help prevent heart disease and cancer (Liu et al., 1999; Osagian et al., 2003; USDHHS and USDA, 2005). Consuming them thus has a double benefit.

3. Consume fewer calories. Perhaps the most fundamental concept of weight loss is that calories do count, whether the diet is low-fat or low-carbohydrate. Following a regimen that reduces portions or excludes broad categories of food generally results in calorie reduction, which promotes weight loss. Because fat has nine calories per gram and protein and carbohydrate have only four, eating less fat can actually result in calorie reduction even if food intake stays constant. So eating less fat and fewer simple carbohydrates is a good idea.

4. Include exercise, which is critical for weight loss success and maintenance (USDHHS and USDA, 2005). Dieters who engage in regular exercise are not only more likely to lose weight, but are far more successful in keeping weight off for at least a year (Pavlou, Krey & Steffee, 1989). In addition, those who lose weight by dieting need to eat less food (or exercise more) to sustain weight loss, because compensatory metabolic processes resist the maintenance of lowered body weight (Leibel, Rosenbaum, & Hirsh, 1995).

5. Reduce consumption of red meat. It is a primary source of saturated fat in the diet, which has been linked to both heart disease and cancer (Hu & Willette, 2002; Ornish, 2004). Excessive protein consumption (especially animal protein, like red meat) may also increase the risk for osteoporosis in women because the body takes calcium from the bone to neutralize the acids that build up in the blood as a result of digesting large amounts of protein (Massey, 2003).

6. Consume "good" fats like omega-3 fatty acids every day or at least twice a week. These are usually found in fatty fish like salmon, and as little as three grams a day may cut risk of cardiac death by nearly 80%, lower triglycerides, reduce inflammation, and help prevent cancer (Hu & Willette, 2002).

7. Choose quality over quantity. Eventually, small portions of higher quality foods may become more satisfying than larger portions of junk food. What is included in the diet is equally as important as what is excluded.

8. Attempt to lose weight in ways that enhance health rather than harming it. Weight loss can be achieved through the use of stimulants like amphetamines, diet drugs such as ephedra, or even through the use of tobacco products as appetite suppressants. However, under most circumstances the potential negative effects of these strategies far outweigh the benefits of weight loss.

9. Base a diet on whole foods rather than supplements. Because low-carbohydrate diets restrict many foods and food groups, supplements are frequently recommended, leading consumers to believe that supplements can substitute for food. An increasing body of research has isolated thousands of substances known as phytochemicals, which are impossible to synthesize in a pill. Phytochemicals found in fruits, vegetables, legumes, and whole grains have disease fighting properties with the potential to prevent a number of chronic diseases, including cancer (Hu & Willette, 2002; Newmark et al. 1999). They are not present in meats and animal products, the basis of many high-protein diets.

Successful Weight Loss

While there is not much scientific evidence for or against the use of low-carbohydrate diets, most existing studies indicate weight loss occurred when study participants were on the diets for longer periods, and when they ate fewer calories. This may indicate that certain dietary patterns, such as a low-carbohydrate approach, make it easier for people to adhere to a lower-calorie diet. A low-fat diet, however, also promotes weight loss, because dieters inadvertently eat fewer calories. One of the most relevant contributions of the current diet debate may be the acknowledgment that the same diet may not work for everyone with respect to initial weight loss. Low-carbohydrate diets do seem to promote short-term weight loss. People on low-carbohydrate diets, however, are very rare among the 3,000 subjects in the National Weight Loss Registry who have lost at least 30 pounds and kept the weight off for at least six years (Klem, Wing, McGuire, Seagle, & Hill, 1997). A low-fat diet also aided weight loss for 3,200 participants in a six-year study related to the Diabetes Prevention Program (Diabetes Prevention Program Research Group, 2002).

Future Initiatives

Most public health and medical professionals advocate more research on the prevention and treatment of obesity. Meanwhile, they recommend an overall healthy dietary pattern that is rich in fruits, vegetables, whole grains, low-fat dairy products, lean meats, poultry, and fish. These recommendations are strikingly similar to the tenets shared by the low-fat and low-carbohydrate advocates. Despite this congruence, the weight loss industry aggressively continues to market new diets, products, and services. Ironically, as the diet business becomes more profitable, obesity rates continue to climb in the United States.

Secretary of Agriculture Ann Veneman (USDHHS and USDA, 2005) has noted that maintenance programs of most popular diet programs are consistent in many ways with the 2005 Dietary Guidelines. The task for health educators is to design messages to help consumers understand the extent and strength of this consistency. This is critical for decontextualizing the unrealistic claims and expectations associated with popular diet programs. Tommy Thompson, former Secretary of Health and Human Services, noted that the new Dietary Guidelines are a "solid combination of research science and common sense...a prescription that we can write for ourselves, fill in for ourselves, and be happier and healthier for it" (USDHHS and USDA, 2005, p. 3). Perhaps the greatest challenge for health educators is to help

consumers write and follow prescriptions that will help mitigate the obesity epidemic in the United States.

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