

A Diet by Any Other Name Is Still About Energy

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The obesity epidemic has fostered increasing interest among many people to seek effective treatment strategies. Relatively few research studies have compared the effectiveness of various diets with different macronutrient composition, and even fewer studies have compared named or branded (trade-marked) weight loss programs using comparable, well-controlled assessment methods and outcome measures. There is significant interest among the public as well as health care professionals regarding the efficacy, safety, and long-term feasibility of adhering to these branded diets for the purposes of guiding decisions regarding the best choices.

In this issue of *JAMA*, Johnston and colleagues¹ report findings from a network meta-analysis designed to assess the comparative effectiveness of branded competing diets that have the availability of published data from randomized clinical trials (RCTs). Network meta-analysis offers a method of estimating the relative effectiveness of available diets in the absence of direct comparisons by using indirect comparisons of 2 diets vs common comparators. This is helpful for standardizing these analyses in a manner that is unlikely to be conducted by the commercial diet vendors and also offers results that can help manage expectations when attempting to choose one dietary approach over another.

This carefully conducted meta-analysis describes eligibility criteria for inclusion, duration and intervention details, and specific outcomes regarding weight loss at 6 and 12 months of follow-up.¹ The search strategy, study selection process, and data extraction system further lend credibility to this review and analysis. The choice of comparators including wait-listed controls and no previously assigned diet or competing dietary program is sound. The use of the Lifestyle, Exercise, Attitudes, Relationships, and Nutrition (LEARN) dietary program first described by Brownell² reflects a reasonable standard for comparison. The approaches to data analyses and detailed discussion of the confidence estimates and assessment of publication bias further attest to the strong study design.

A total of 48 RCTs were identified, met eligibility criteria, and were evaluated (N = 7286 individuals). Of these studies, 43 reported weight loss at 6 months and 25 trials reported weight loss at 12 months. Ultimately, Johnston et al¹ concluded that both the low-carbohydrate and low-fat diets were associated with average weight losses of approximately 8 kg at 6 months and 6 to 7 kg at 12 months compared with no diet.¹ The LEARN and moderate macronutrient distribution diets (including Biggest Loser, Jenny Craig, Nutrisystem, Volumetrics, and Weight Watchers) were associated with loss of body weight of about 2 kg less overall in these compar-

isons. Further considerations regarding the inclusion of exercise and behavioral support are important.

The authors are careful to point out that while the strengths of these analyses include rigorous application of criteria used to determine the eligibility of these studies and ranking of the overall quality in the review, the limitations remain important. There are more low-carbohydrate diet (Atkins, Zone, and South Beach) studies reported than any other study type including low fat. The numerous moderate macronutrient studies, which are based on diet composition, are mixed-branded diets that involve use of food replacement products, different types of behavioral approaches, and encompass a variety of other differences that make it difficult to differentiate and compare with other diets. Also, no sensitivity analyses were provided to help readers compare the level of adherence to these different diets and whether the diet composition or the level of adherence (representing successful caloric restriction) were the underlying causes of less weight lost.

As well done as these comparative analyses are and as reasonable as the conclusions by Johnston et al¹ appear to be (eg, that both low-carbohydrate and low-fat diets appear to achieve similar weight loss results), several questions and additional details would facilitate overall interpretation of these findings. For example, even though the results are based solely on weight loss, it would be helpful to know more about the differences in nutrient quality, long-term levels of dietary adherence, and energy intake associated with these diets involving very different diet compositions. Protein intakes of 30% of kilocalories, or double what the other diets provide, raise questions about possible long-term influences on kidney function, calcium losses, and other questions that should be explored. The adverse effects reported are certainly benign, ranging from headache to halitosis during the experimental dieting period, but what, if any, further changes occur with additional months or years of this high protein intake? Are meal replacement diets affordable and tolerable long term and are there economic, social isolation, and other limitations that put these diets out of reach for medium to low income subgroups? Are there compromises in the intake of sodium, solid fat, or sugar, or are there other adverse factors that may enhance adherence to these meal replacements but limit nutrient quality?

The Preventing Overweight Using Novel Dietary Strategies (POUNDS LOST) trial^{3,4} was an RCT that tested differences in weight loss achieved by 4 different approaches to diet composition: (1) a low-fat, average protein diet (20% fat, 15% protein, and 65% carbohydrate), (2) a low-fat, high-protein diet (20% fat, 25% protein, and 55% carbohydrate), (3) a high-fat, average protein diet (40% fat, 15% protein, and



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45% carbohydrate), and (4) a high-fat, high protein diet (40% fat, 25% protein, and 35% carbohydrate).⁴ In addition, saturated fat was reduced to 8% or less of kilocalories per day, dietary fiber was 20 g/d or greater, and cholesterol of 150 mg or less per 1000 kcal. Low glycemic index foods were recommended and a 750 kcal/d deficit from estimated requirements was tailored to each individual. Not only were weight losses similar across all 4 diets at 2 years, the specific components of weight loss including body fat, abdominal fat, and hepatic fat were likewise similar with no differences in loss of lean body mass.³

In an additional analysis from the POUNDS LOST study,⁵ no differences were reported among the 4 diet groups when examining other longer-term outcomes (such as food cravings or mood changes). Despite some short-term differences by the 2-year end point, regardless of their macronutrient composition, weight loss was associated with significant reductions in cravings for fats, sweets, and starches while cravings for fruits and vegetables increased. This suggests that over time people not only adapted but actually preferred the taste of the nutrient-dense foods, such as fruits and vegetables, reflecting enhanced adherence to recommended intake of foods that are typically underconsumed by the population at large. As data

continue to accumulate regarding the benefits of consuming high-quality diets associated with reduced risk of cardiovascular and all-cause mortality, the preferred dietary approach to weight loss and maintenance may become increasingly evident as well.⁶⁻⁸ The POUNDS LOST results,³⁻⁵ although not specifically representing branded diets, provide relevant findings based on the generic differences in the macronutrient composition that defines them and similarly concluded that weight loss is achieved by adherence to any diet that successfully reduces calorie intake. Even the well-documented reductions in resting energy expenditure⁹ that are known to accompany weight loss did not differ by dietary composition at 2 years, rather apparently it is weight loss that influences this phenomenon.

Overall, the findings from the study by Johnston et al,¹ along with other recent data, underscore the importance of effective diet and lifestyle interventions that promote behavioral changes to support adherence to a calorie-restricted, nutrient-dense diet that ultimately accomplishes weight loss. Choosing the best diet suited to an individual's food preferences may help foster adherence, but beyond weight loss, diet quality including micronutrient composition may further benefit longevity.

ARTICLE INFORMATION

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