

A Call for an End to the Diet Debates

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As the obesity epidemic persists, the time has come to end the pursuit of the “ideal” diet for weight loss and disease prevention. The dietary debate in the scientific community and reported in the media about the optimal macronutrient-focused weight loss diet sheds little light on the treatment of obesity and may mislead the public regarding proper weight management. Numerous randomized trials comparing diets differing in macronutrient compositions (eg, low-carbohydrate, low-fat, Mediterranean) have demonstrated differences in weight loss and metabolic risk factors that are small (ie, a mean difference of <1 kg) and inconsistent. In the past year alone, 4 meta-analyses of diet comparison studies have been published, each summarizing 13 to 24 trials.¹⁻⁴ The only consistent finding among the trials is that adherence—the degree to which participants continued in the program or met program goals for diet and physical activity—was most strongly associated with weight loss and improvement in disease-related outcomes. The long history of trials showing very modest differences suggests that additional trials comparing diets varying in macronutrient content most likely will not produce findings that would significantly

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advance the science of obesity. Progress in obesity management will require greater understanding of the biological, behavioral, and environmental factors associated with adherence to lifestyle changes including both diet and physical activity.

Macronutrient content may influence dietary adherence via the satiating properties of protein, carbohydrates, and fat. However, dietary content is only one of many factors influencing adherence. The assumption that one diet is optimal for all persons is counterproductive because this assumption ignores the variation in adherence influenced by food preferences, cultural or regional traditions, food availability, and food intolerances. These are independent of direct physiological effects of macronutrient composition on weight loss. The most important question is how to improve behavioral adherence.

There are 2 reasons the diet debates persist. First, the commercialization potential of breakthrough diets is substantial. Fad diets have created a multibillion-dollar industry. The difference between fad diets is al-

most entirely related to macronutrient composition (eg, Zone, Atkins, South Beach, Dukan, Paleo). A second factor is the assumption that lifestyle interventions are ineffective. Poor adherence (and consequent weight regain) following the intervention is cited as evidence that these interventions do not work.⁵ This conclusion can be challenged because it assumes a definition for efficacy more stringent than that applied to other forms of preventive care.

Termination of treatment or nonadherence almost always results in reduced benefit. The effects of cholesterol-lowering agents, hypertension drugs, and diabetes medications do not have long-lasting effects after patients stop taking them, with effects declining within a matter of hours (eg, metformin) to months (eg, statins).

Just like medical therapies, behavioral interventions should only be expected to be effective when treatment is active. That lifestyle interventions are viewed as ineffective is especially surprising given that 3 large long-term trials demonstrated that the effects of a lifestyle intervention on diabetes prevention are actually sustained long after the intervention ends.⁶⁻⁸ The Finnish Diabetes Prevention Study compared a 4-year lifestyle intervention with health education and found a reduction in diabetes incidence for as long as 13 years,⁶ 9 years after the active intervention ended. The China Da Qing Diabetes Prevention Study showed that a 6-year lifestyle intervention more effectively reduced diabetes risk than a control group for 20 years,⁸ 14 years after the intervention ended. The Diabetes Prevention Program compared a lifestyle intervention with metformin and

placebo, but exposed the latter 2 groups to the lifestyle intervention 3 years into the study.⁷ Even though all groups eventually received some amount of lifestyle intervention, at 10 years the cumulative incidence of diabetes was lowest in the lifestyle intervention group; this intervention delayed onset of diabetes by 4 years relative to 2 years in the metformin group. Current efforts need to understand the common factors of these trials, all of which involved multipronged interventions involving dietary and exercise counseling and behavioral modification. The pursuit of the ideal macronutrient content diet is unidimensional, ignoring 2 of the 3 major components of standard lifestyle interventions: behavioral modification and exercise. To consider lifestyle interventions as diets ignores their complexity, with behavioral modification as the piece that specifically addresses adherence.

Another important research question is how to improve the scalability of lifestyle interventions. Despite the evidence, lifestyle interventions may have been used sparingly in clinical practice because reimbursement is

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inadequate. In December 2011, the Centers for Medicare & Medicaid Services (CMS) announced that it would reimburse lifestyle interventions but limited this coverage to primary care physicians, physician assistants, and nurse practitioners. The restriction to primary care practitioners will limit implementation of lifestyle interventions because primary care practitioners are not usually familiar with behavioral counseling for weight loss. These clinicians also may not have the time or resources to deliver intensive lifestyle interventions, as evidenced by a recent steady decline in obesity counseling by primary care physicians.⁹ The number and duration of visits that will be reimbursed by CMS are also less than that studied in clinical trials.

In a shrinking funding environment for both health care and research, it is puzzling that the diet debate continues when lifestyle interventions with well-established long-term efficacy are available but have not received the necessary support to be widely imple-

mented. The ongoing diet debates expose the public to mixed messages emanating from various trials that have yielded little but have heavily reinforced a fad diet industry that derives billions of dollars from a nation that is not getting healthier. Because behavioral adherence is much more important than diet composition, the best approach is to counsel patients to choose a dietary plan they find easiest to adhere to in the long term. Patients should develop an appropriate physical activity program and learn behavioral modification to promote long-term adherence. Although research specifically focused on improving adherence is ongoing, the number of studies being conducted is small compared with head-to-head macronutrient-focused diet comparison studies. Advancing obesity treatment requires emphasis on the biological, behavioral, and environmental factors influencing adherence to lifestyle changes and developing reimbursement strategies to support lifestyle interventions.

ARTICLE INFORMATION

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REFERENCES

1. Ajala O, English P, Pinkney J. Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes. *Am J Clin Nutr*. 2013;97(3):505-516.
2. Wycherley TP, Moran LJ, Clifton PM, Noakes M, Brinkworth GD. Effects of energy-restricted high-protein, low-fat compared with standard-protein, low-fat diets: a meta-analysis of randomized controlled trials. *Am J Clin Nutr*. 2012;96(6):1281-1298.
3. Hu T, Mills KT, Yao L, et al. Effects of low-carbohydrate diets versus low-fat diets on metabolic risk factors: a meta-analysis of randomized controlled clinical trials. *Am J Epidemiol*. 2012;176(suppl 7):S44-S54.
4. Bueno NB, de Melo IS, de Oliveira SL, da Rocha Ataide T. Very-low-carbohydrate ketogenic diet v. low-fat diet for long-term weight loss: a meta-analysis of randomised controlled trials [published online May 7, 2013]. *Br J Nutr*. 2013;1-10.
5. Bacon L, Aphramor L. Weight science: evaluating the evidence for a paradigm shift [published online January 24, 2011]. *Nutr J*. doi:10.1186/1475-2891-10-9.
6. Lindström J, Peltonen M, Eriksson JG, et al; Finnish Diabetes Prevention Study (DPS). Improved lifestyle and decreased diabetes risk over 13 years: long-term follow-up of the randomised Finnish Diabetes Prevention Study (DPS). *Diabetologia*. 2013;56(2):284-293.
7. Knowler WC, Fowler SE, Hamman RF, et al; Diabetes Prevention Program Research Group. 10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet*. 2009;374(9702):1677-1686.
8. Li G, Zhang P, Wang J, et al. The long-term effect of lifestyle interventions to prevent diabetes in the China Da Qing Diabetes Prevention Study: a 20-year follow-up study. *Lancet*. 2008;371(9626):1783-1789.
9. Kraschniewski JL, Sciamanna CN, Stuckey HL, et al. A silent response to the obesity epidemic: decline in US physician weight counseling. *Med Care*. 2013;51(2):186-192.