Do Dietary Guidelines Explain the Obesity Epidemic?

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Two decades ago, the movements known as evidence-based medicine and evidence-based public health arose out of concerns that the road to bad interventions is paved with good intentions, which sometimes result in more harm than good.[1,2] Since then, both medicine and public health have critiqued scientific evidence more carefully and weighed benefits against harms before making recommendations to practitioners and the public.[3,4] This analytic rigor is reflected in the work of groups such as the U.S. Preventive Services Task Force (USPTSF)[5] and the Task Force on Community Preventive Services.[6]

Attention to the same concerns has long been evident in the development of dietary guidelines. For decades, researchers, clinicians, and policymakers have considered the potential harms, along with the benefits, of advocating changes in the diet.[7] The need for a systematic review of these issues was explicit as long ago as the late 1980s, when the *Surgeon General's Report on Nutrition and Health*[8] and the National Research Council's *Diet and Health*[9] reports together devoted more than 1400 pages to meticulous analyses of the scientific evidence supporting each recommendation and to cautious, nuanced critiques of the quality and limitations of the data. Today's readers enjoy access to an extensive literature regarding the potential harms of dietary modifications,[10,11] of dietary guidelines,[12,13] and of practice guidelines in general.[14]

Science is not the only consideration in developing dietary guidelines, however. Government agencies and the constituents they serve invariably bring an agenda to statements of nutrition advice.[15] Dietary guidelines have implications at every level of government, from federal agencies such as the U.S. Department of Agriculture (USDA) to the local school board. In the private sector, the food industry, ranchers, restaurateurs, and beverage producers—along with their lobbyists—have famously exerted pressure to eliminate or soften language in the guidelines that might harm commercial interests. Accommodating the realities of public acceptance has also been a factor, as when the best advice based on science was considered too unrealistic for widespread adoption.[8]

The critical appraisal of nutrition research is inherently challenging, perhaps moreso than in other areas of public health or medicine. The time needed to measure meaningful health outcomes is so long that studies often must rely on questionable surrogate measures. Almost every study is complicated by the enigma of whether foods, some combination of their nutrients, or interactions between foods and other covariates are responsible for observed outcomes. Randomized trials are challenging, not least because of the inherent difficulty of controlling and measuring subjects' diets and the prohibitive costs and logistic challenges of measuring long-term outcomes. Interventions and outcomes in diet research may be nebulously defined.[16] Even the best dietary trials lack the crisp adherence and evidentiary strength of gold standard efficacy trials of drugs and medical devices.[17,18] Nutrition research has had its share of "flip-flops" in which dietary practices and nutrients that were supposedly healthful were ultimately shown to offer little benefit or to cause harm (e.g., beta-carotene). Given such difficulties, whether the evidence is good enough to recommend population-based dietary changes comes down to a matter of subjective judgment.

Despite these challenges and the enduring pressure of special interests, what is most striking is that for nearly half a century almost every authoritative government or professional committee that has reviewed research on diet and chronic disease ultimately has arrived at the same basic dietary advice: eat less; move more; eat more fruits, vegetables, and whole grains; and avoid junk food. One need not know the data to infer from the consistency itself and from the number and quality of expert panels over these years that the scientific evidence must be compelling.

Against this backdrop appears an article in this issue of the *American Journal of Preventive Medicine*, in which Marantz et al.[19] discuss the potential harm of dietary guidelines in general and of advice about dietary fat in particular. Although the authors give little attribution to the extensive prior writing on this topic, they do invoke many of the themes we have just mentioned and with which we agree. We strongly disagree, however, with their depiction of how the guidelines were developed, their characterization of the evidence on which the guidelines were based, and their indictment of public health guidance in general.

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The authors argue, for example, that the evidence for limiting dietary fat intake consists largely of weak observational data gathered from ecologic associations. The accumulated evidence is much stronger and has been so since the 1980s, when the authors' chronology picks up the story. By 1989, the USPSTF, whose standards the authors laud, had already reported the results of controlled clinical trials (grade II-1 evidence) in which diets low in saturated fat resulted in lower incidence of cardiac events (e.g., myocardial infarction, sudden death).[20] More robust evidence has since accumulated. Dozens of randomized trials (grade I evidence) have now documented the ability of low-fat diets to reduce the incidence of cardiovascular events[21] and sometimes to reverse atherosclerotic disease.[22] Such diets are likely to be low in saturated fat, trans fat, and calories, which may account for the observations.

A disturbing trend occurred during the years when the public was advised to limit dietary fat: food companies substituted sugars for fat in many processed foods, people increased their caloric intake, and the prevalence of obesity rose. Marantz et al.[19] correctly document these trends but incorrectly blame them on dietary guidelines. The fallacy of inferring causality from a temporal association is familiar to methodologists, but the suggestion of causality in this case is also naive on policy grounds, because it assumes that a guideline could singlehandedly change a nation's eating habits. A population's food preferences, portion sizes, and physical activity levels are products of advertising, the built environment, and a milieu of other "obesogenic" influences, not the consequence of a poorly distributed federal publication. What actually occurred during the period described by the authors was a secular change: Scientists, health professionals, and policymakers recognized the benefits of reducing the population's intake of saturated fat and calories, and they targeted total fat intake to address both problems.[7,8] The promulgation of a guideline to lower fat intake was a component of this secular trend, not its origin. In creating products low in fat but with similar calorie levels, food companies were responding to a secular trend, not to a dietary guideline.

Rather than impugning the validity of the advice to moderate dietary fat intake, as Marantz et al.[19] suggest, the concurrent increase in energy consumption in the wake of this advice underscored the need for the public health community to retool its message, and to do more to address caloric intake, portion size, inactivity, and other contributors to obesity. These new needs do not negate the evidence about fat; the public needs continued guidance on saturated fat, trans fat, and the caloric content of fat. Research shows that people react to the promotion of low-fat foods by consuming more calories,[23] precisely what Marantz et al. describe. However, to fault the dietary guidelines because people behave this way is to suggest that a smoker who gains weight after quitting should not have been counseled to stop smoking.

Marantz et al.[19] go further, raising the fundamental question of whether public health guidelines are appropriate altogether. In their view, "the notion that the government should tell people what and how much to eat is inherently paternalistic." They contend that guidelines are foisted on a public that did not ask for them, and that, because of potential unintended consequences, guidelines should be withheld until there is definitive evidence that they will do more good than harm.[19] Others might argue that people are clamoring for precisely this information, have a right to know what scientists are thinking, and are entitled to weigh the benefits and the harms for themselves.

If it was paternalistic for the government to advise people how to eat, as Marantz et al.[19] suggest, was it equally paternalistic for Surgeon General Luther Terry to alert the public about the hazards of tobacco use and to recommend in 1964 that smokers give up cigarette smoking?[24] Raising concerns about the hazards of riding a motorcycle without a safety helmet, the need to secure children in car seats, and the dangers of hydrocarbon emissions, for example, are, in our view, less exercises in paternalism than the fulfillment of government responsibility to share what is known about health risks and suggested ways to reduce them. There are legitimate debates about the propriety of enforcing such guidelines (e.g., legislative mandates or financial penalties for violation),[25,26] but it is quite another matter to suggest that the advice itself is inappropriate.

Marantz et al.[19] make the useful points that guidelines can create unintended harms and that it would be ideal to quantify those risks before issuing advice. But in the absence of such data—a likelihood given the obstacles to funding and fielding a controlled study of outcomes that investigators cannot define at the outset—the public health community is obliged to use its best judgment in deciding whether to withhold or offer advice when the evidence is incomplete. The choice made by Luther Terry was undoubtedly correct: failure to alert the public to the dangers of smoking posed a greater risk than the unknowable risk of a possibly harmful public response.

Marantz et al.[19] write that cardiovascular disease and cancer are not sufficient problems to justify such gambles. They believe that falling cardiovascular mortality rates in recent decades "undermine any notion of a public health emergency."[19] With this too we disagree, not least because much of the mortality reduction occurred because people responded to advice to quit smoking,[27] guidance that the authors would have presumably rejected for lack of evidence about the potential harm it might cause. Falling mortality rates notwithstanding, the fact remains that cardiovascular disease and cancer—diseases to which dietary fat intake remain causally linked[28,29]—still

account for 58% of all deaths in the United States.[30] Obesity is expected to increase the incidence of those and related diseases (e.g., diabetes) and ranks as the leading cause of death after tobacco.[31] Under these circumstances, the public is placed at greater risk by withholding information about dietary causes than by sharing it. Withholding dietary guidance out of fear of unintended consequences elevates the duty for caution above the duty to inform, a notion that might itself be considered paternalistic.

Marantz et al.[19] do remind us about the importance of learning from mistakes. As inventors and engineers know well, successful innovation sprouts from the study of failures. When the prevailing message fails to achieve its intended aims or achieves the wrong ends, the solution is not to abandon the enterprise but to reshape the message to achieve desired outcomes. Past experience has now taught us that messages about fat must be accompanied by messages about caloric balance and must deal more adeptly with complex issues: differentiating between "good" and "bad" fats, presenting nutrition advice in the context of foods and diets, bringing food industry marketing messages into closer alignment with healthy dietary practices, tailoring dietary advice to the needs of minority and low-literacy populations, and restructuring the eating environment to promote more healthful dietary choices.

Challenges to improving the American diet and reducing the prevalence of obesity are numerous and formidable, and recurring setbacks build frustration as the public health and economic implications of failure grow more apparent. Granted, dietary guidelines can be improved, but they are not the culprit in the obesity epidemic. The larger concerns are poverty and an environment that promotes overeating and inactivity. To scapegoat guidelines is to oversimplify the complex and to obfuscate the necessary—albeit difficult—task of confronting these larger determinants of obesity.

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