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Special article

In the face of contradictory evidence: Report of the *Dietary Guidelines for Americans* Committee

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A B S T R A C T

Concerns that were raised with the first dietary recommendations 30 y ago have yet to be adequately addressed. The initial Dietary Goals for Americans (1977) proposed increases in carbohydrate intake and decreases in fat, saturated fat, cholesterol, and salt consumption that are carried further in the 2010 Dietary Guidelines Advisory Committee (DGAC) Report. Important aspects of these recommendations remain unproven, yet a dietary shift in this direction has already taken place even as overweight/obesity and diabetes have increased. Although appealing to an evidence-based methodology, the DGAC Report demonstrates several critical weaknesses, including use of an incomplete body of relevant science; inaccurately representing, interpreting, or summarizing the literature; and drawing conclusions and/or making recommendations that do not reflect the limitations or controversies in the science. An objective assessment of evidence in the DGAC Report does not suggest a conclusive proscription against low-carbohydrate diets. The DGAC Report does not provide sufficient evidence to conclude that increases in whole grain and fiber and decreases in dietary saturated fat, salt, and animal protein will lead to positive health outcomes. Lack of supporting evidence limits the value of the proposed recommendations as guidance for consumers or as the basis for public health policy. It is time to reexamine how US dietary guidelines are created and ask whether the current process is still appropriate for our needs.

Introduction

> What is required is less advice and more information.
> —Gerald M. Reaven [1]

There is little disagreement that we have a nutritional crisis in the United States. One manifestation is confusion in the mind of the public as to what constitutes sound principles [2,3]. Recent scientific advances have not led to consensus, but rather to substantial disagreement among experts and further uncertainty for the public. Nutritional health covers a wide range of concerns but foremost in the mind of the public are whether the standing recommendations for lowering fat intake and increasing carbohydrate intake were ever appropriate for the prevention of obesity, diabetes, and cardiovascular disease; whether the regulation of carbohydrates is more important; and what the role of protein, especially from animal sources, should be in the diet. These concerns were raised with the first national dietary recommendations 30 y ago and have yet to be adequately addressed even as the nutritional health of Americans continues to decline.

The 2010 Dietary Guidelines Advisory Committee (DGAC) Report [4], released on June 15, 2010, was expected to address these issues (sections of the report are indicated as part-section number, e.g., B2; pages in the report are denoted, e.g., B2-3.). The DGAC Report had the opportunity to review and evaluate the emerging science, to distinguish between established principles and ideas that are still areas of research or controversy, and to provide clear, consistent information for Americans. Instead,

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the 2010 DGAC Report continues to make one-size-fits-all recommendations that are based on evidence that is weak, fragmented, and even contradictory in nature.

Strong recommendations, weak evidence

Important aspects of the recommendations remain unproven. The DGAC Report provides several examples in the summary of "Needs for Future Research" in each section. In the carbohydrates section, a goal of that research would be to:

> Develop and validate carbohydrate assessment methods. Explore and validate new and emerging biomarkers to elucidate alternative mechanisms and explanations for observed effects of carbohydrates on health [p. D5-43 [4]]. … Studies of carbohydrates and health outcomes on a macronutrient level are often inconsistent or ambiguous due to inaccurate measures and varying food categorizations and definitions.

However, the DGAC Report's summary statement on carbohydrates is unambiguous in the face of these inconsistencies:

> Healthy diets are high in carbohydrates [p. D5-42].

In the absence of research that can explain the mechanisms that would account for a beneficial effect of high carbohydrates on health outcomes, the recommendation must be considered premature.

The protein section includes a call for future research that will:

> Develop standardized definitions for vegetable proteins and improve assessment methods for quantifying vegetable protein intake to help clarify outcomes in epidemiologic studies in this area. … Assessing vegetarian eating patterns and their protein content is complex and current methodologies do not capture critical variations. Therefore, investigators' ability to quantify any possible association with health benefits is limited [p. D4-31].

Yet the DGAC Report's recommendations suggest no such limitations. Americans are told to:

> Shift food intake patterns to a more plant-based diet that emphasizes vegetables, cooked dry beans and peas, fruits, whole grains, nuts, and seeds [p. B3-3].

The admission that health benefits from such a shift remain unknown and the acknowledgement of "potential limitations of [a] plant-based diet for key nutrients" (p. D4-31) would suggest that such a recommendation be made with more circumspection.

The DGAC Report calls for a general increase in whole grain consumption:

> Whole-grain versions of many grain products (such as plain white bread, rolls, bagels, muffins, pasta, breakfast cereals) should be substituted to meet the recommendation that half of grains consumed be whole grains [p. B2-8].

However, the DGAC Report also calls for additional research to:

> Develop definitions for whole grain foods. … there is no consistent way that whole grain foods are defined and determined. Without clear definitions for whole grain foods, it is difficult to compare research studies examining the effectiveness of various whole grains on biomarkers of interest in CVD [cardiovascular disease], diabetes, and obesity [p. D5-43].

Urging an increase in whole grain consumption before the term is consistently defined stymies any practical attempts to apply this recommendation.

These examples illustrate the general pattern of the DGAC Report: strong recommendations are made with weak and inconclusive evidence to support them. Conclusions rest on evidence-based methodology, embodied in the creation of the Nutrition Evidence Library (NEL). In practice, the methodology and the utilization of the NEL demonstrate several critical weaknesses:

1. Research questions are formulated in a way that precludes a thorough investigation of the scientific and medical literature.
2. Answers to research questions are based on an incomplete body of relevant science; relevant science is frequently excluded due to the nature of the question.
3. Science is inaccurately represented, interpreted, and/or summarized.
4. Conclusions do not reflect the quantity and/or quality of relevant science.
5. Recommendations do not reflect the limitations, controversies, and uncertainties existing in the science.

The initial Dietary Goals for Americans (1977) proposed that Americans increase carbohydrate intake and decrease fat, saturated fat, cholesterol, and salt consumption, recommendations that are carried further in the proposed 2010 guidelines. Thirty years ago, critics argued "that the value of dietary change remains controversial and that science cannot at this time insure that an altered diet will provide improved protection from certain killer diseases" [5]. The proposed recommendations raise these same concerns. What remains of value in the current DGAC Report is substantially undermined by a failure to address these ongoing criticisms.

Macronutrient proportion and health outcomes

A consistent theme in the 2010 DGAC Report is the statement that "very few American children or adults currently follow the US Dietary Guidelines" (p. D1-8) and that "the primary focus should be on reducing excessive calorie intake" (p. B2-3). However, according to the DGAC Report, caloric intake remains within recommended levels, and leisure-time physical activity has increased slightly (pp. D1-1, B2-3). Adult women on average consume at the lowest end of the recommended calorie range and yet are the most overweight/obese (p. D1-4). The macronutrient proportions of the typical American diet fall within recommended ranges (p. D1-1): Americans currently consume less than 35% of their calories as fat and less than 300 mg of cholesterol per day (p. D3-10).

Americans are consuming more calories than in the past, but the increase has not been equally distributed across food groups. The increase in calories in the American diet over the previous 30 y is primarily due to carbohydrate intake (Fig. 1). Average daily calories from meat, eggs, and nuts have increased by about 20 cal since 1970 as average daily calories from flour and cereal products have increased by nearly 10 times that amount