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A unified definition of whole-grain foods is needed

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There is strong, consistent support for the efficacy of whole-grain food consumption in the risk reduction of cardiovascular disease, diabetes, cancer, and all-cause mortality, as underscored by the *Dietary Guidelines for Americans* (DGA), which recommend that at least half of grain servings incorporate whole grains (1). Nevertheless, the definition of such foods remains elusive. In this issue of *The American Journal of Clinical Nutrition*, Du et al. (2) elucidate the differences among definitions provided by the DGA, FDA, AHA, American Association of Cereal Chemists International (AACCI), and Whole Grains Council (WGC). Across these varying definitions of whole-grain foods, the estimated whole-grain intakes among adults ranged from 1.05 (AHA) to 0.53 (FDA) oz. eq./d (29.8 to 15.0 gram eq./d) in 2017–2018 NHANES data. The estimated increase in intake over time also varied by definition. This amount of discrepancy in the data across the definitions underscores the need to work toward scientific consensus on the definition of whole-grain foods for observational research and population surveillance. Although there are encouraging trends of increasing whole-grain consumption over time in the United States (with the exception of the WGC definition), all of the definitions lead to the inference that the US population falls considerably short of the DGA recommendations for whole-grain intake.

Although the main sources of whole-grain foods were ready-to-eat cereals, cooked grains and cereals, and breads, the specific foods and the philosophy of classification as a whole-grain food varied markedly. These issues create problems for consumers, industry, and government. Supplemental Figure 3 (2) is particularly informative, depicting the overlap among definitions of foods described as whole grain. It is notable that the least overlap is between the WGC and AHA definitions. The differences between these 2 definitions should be given close study because the AHA definition revealed the strongest trend in increasing intake over time in NHANES, and the WGC definition revealed little to no trend over time.

We recommend a close read of the Du et al. (2) article, including the supplementary material. Two aspects of that supplementary material will be useful in moving toward a comprehensive and rational definition of whole-grain foods. These are 1) putting the 5 whole-grain food definitions used by different organizations in the United States in 1 place, and 2) lists of whole-grain food categories, with specific food examples [Supplemental Tables 1 and 2 of (2)]. Supplemental

Tables 5 and 6 (2) show several points worthy of emphasis. The time trend in whole-grain food consumption is largely due to increased intake of whole-grain breads, the increase in total whole-grain intake largely occurred between 2003 and 2012, and there was no increase in total whole-grain intake using the WGC definition. This point is important because the WGC definition is the most permissive with respect to other ingredients in the food, besides grain. It suggests that food companies have been producing more foods containing whole grains, but consumers were not necessarily improving their diet otherwise, and that through 2012, but not afterwards, the other constituents of whole grain-containing foods became healthier.

Du et al. (2) recommend that a standard definition be created. Among aspects of such a definition, we find especially compelling the actual amount of whole grain in the food and the ratio of refined to whole grain in the product. This ratio should be low, but will often not be 0, given the contingencies of cooking and palatability properties of refined- compared with whole-grain foods. It therefore remains difficult to estimate the overall dietary quality of the whole-grain foods. One feature that could be considered in this regard is the ratio of total carbohydrate to whole grain in the product. In many cases this should be low, but could be high in a grain-containing whole vegetable and nut dish, given that many beneficial phytochemicals are present along with carbohydrate in such foods. A more focused rule would be a low ratio of added sugar to whole grain in the product and/or a low ratio of starch to whole grain. Our view is that there is no “optimal” diet pattern; rather, there are many ways to eat a diet that is good for long-term health. These diets will include a variety of foods with different individual qualities. Some consumption is for health, some ensures sufficient energy intake, and some is for taste and convenience. The general question is “what is a reasonably ‘good’ diet”? Is it a good strategy to recommend enough “healthful” foods (supported by the science to date), leaving discretion for filling in remaining energy needs with “less healthful” foods (e.g., those high in 100%

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refined grains and added sugars)? Is the answer to this question the same for youth during rapid growth, high energy expenders such as athletes, and the elderly? For the latter, energy needs are typically low, and thus the dietary recommendations should over-emphasize nutrient-rich foods, such as whole grains, and de-emphasize foods that are less nutrient-rich, such as 100% refined grains, or nutrient-poor (sugary beverages). To our knowledge, the nutrition literature has yet to provide clear guidance for answers to these questions.

Whole-grain content, and the overall quality of individual foods and the whole diet, are important. Nevertheless, making this information accessible is nontrivial. Whereas the food industry and government are able to internalize complex messages

in making business and health policy decisions, making a single informative label for consumers is an ongoing challenge.

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