

65

DIETARY STANDARDS AND GUIDELINES: SIMILARITIES AND DIFFERENCES AMONG COUNTRIES

JOHANNA T. DWYER, DSc, RD

*Tufts University, Boston, Massachusetts, and National Institutes of Health,
Bethesda Massachusetts, USA*

Summary

Nutrient reference values and dietary guidelines are two key dietary standards necessary for nutrition science and policy making. Nutrient reference values are dietary standards for nutrient requirements that all humans share, and that are usually quite similar from country to country. Dietary guidelines are evidence-based, country-specific recommendations for food patterns that promote healthy weights and good health while helping to prevent and reduce diet-related disease. They differ from country to country. Nutrient reference values should be and are gradually converging and being harmonized between countries. In contrast, dietary guidelines remain unique to each country because of differences in foodways, cuisines, customs, economics, and food production capacity. The reasons for the similarities and differences between these two standards across several countries are described, and likely future directions are suggested. The focus is on standards published in English that are used by governments of highly industrialized countries with Western eating patterns. Possible useful future directions for dietary reference values and dietary guidelines are summarized as the chapter concludes.

Introduction

Dietary reference intake values and dietary guidelines are two dietary standards that are essential nutrition policy tools. Their characteristics and purposes are quite different between countries. Therefore, in this increasingly global nutrition world, scientists and policy makers need to understand what they are, how they vary, and their proper use. Clarifications of the various meanings of the requirement estimates used in Western countries and provided in

this chapter may be helpful in sorting out true differences between reference standards and expert groups, and differences arising simply as a result of semantics.

Dietary Reference Intakes

Definition

Dietary nutrient reference intake values describe and quantify universal human requirements for essential nutrients. The reason for developing dietary reference values is

to provide uniform, evidence-based, quantitative data on human nutrient needs. This information can be used for many purposes, including diagnosis or assessment of individual intakes, and in the examination and interpretation of nutrition surveys to provide an assessment of probable nutrient intake adequacy of populations. The reference standards are also used for planning of individual diets, food labeling, formulating criteria for food programs, institutional feeding, and other nutritional interventions. When reference values are used appropriately, they help to harmonize nutrient-based dietary assessment and planning, both within and between countries.

Nutrient Reference Values and Their Meanings

Table 65.1 presents a summary of the terms used in various countries for their nutrient reference standards. The reference values for nutrients used have various names in different countries, but generally the terms refer to similar concepts and use a similar framework for establishing them. Table 65.2 compares the terminology used by expert groups in different Western countries. In the future it is hoped that nutrient intake values can be better harmonized to improve the objectivity and transparency of values of recommendations and to smoothe the consideration of differences among them (King and Garza, 2007).

Similarities Across Countries

Today, methods for ascertaining nutrient requirements are becoming more widely accepted and harmonized between countries, with the result that values are converging more than ever before. The data on which dietary standards are based are generally similar from one country to another. They include relevant human clinical and experimental data (such as depletion–repletion studies, dose–response studies, and balance studies), epidemiological studies, and relevant animal studies. The methods used in formulating dietary standards generally involve a review of the literature and recommendations by expert scientists on the nutrient in question.

Most groups setting recommendations now provide values for classical nutrient requirements and newer sections on dietary factors that are relevant to the reduction in risk of diet-related diseases. These chronic disease risk reduction values are challenging since the causes of the diseases are multifactorial, including but not limited to one or more dietary constituents. When experimental studies are possible for studying chronic diseases, they are

usually of short duration with high doses and surrogate markers from which lower intakes over many years and chronic disease endpoints are inferred. Risk reduction values are therefore not usually determined experimentally; rather, they are based largely on observational epidemiology, with all the difficulties residual confounding creates for establishing causal inference.

There is variability in nutrient requirements even among individuals who are similar in age, sex, and life stage, and therefore statistical concepts are essential in the derivation and interpretation of nutrient requirement estimates. The use of probability models and statistical techniques is vital in the formulation of human nutrition requirements since human nutrient needs all have a probability distribution that must be dealt with by a probability approach (Rand, 1990). For individuals, the values are stated in probabilistic terms since an individual's nutrient requirements are never known with certainty.

Virtually all of the groups setting nutrient reference standards now use similar statistical approaches for determining the midpoint of the distribution of requirements for a given function for each nutrient, and for deriving an estimate of the standard deviation of the requirements. The standard setting groups also use probability theory to state a level that ensures health for most individuals at some point above the mean requirement, such as 2 standard deviations. Although data are often lacking at present, a second set of distributions of risk of excessive intakes is used as the basis for establishing the tolerable upper intake levels (ULs) of nutrients.

Most groups setting nutrient requirements base them on criteria that reflect a meaningful biomarker of a nutrient-related function (Yates, 2007). This is critical since the choice of the indicator or function chosen will determine the amount of the nutrient that is needed. Desirable criteria exhibit a dose–response function, are responsive to inadequacy or excess of a single nutrient, resist rapid day-to-day changes in response to inadequate, adequate, or excessive intakes, are easily measurable or assessable with non-invasive methods, and are unresponsive to environmental changes other than nutrient intakes (King and Garza, 2007). Although functional criteria that reflect chronic disease endpoints are often the most relevant, the data for using them are often not available (Trumbo, 2008).

Methods for using nutrient reference values in dietary assessment and planning are also becoming increasingly popular and uniform. One such use is in developing