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Nutrient databases: critical tools for policy development

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Abstract

Nutrient databases provide critical tools for developing effective government policies to promote healthy diets and a nutritionally healthy food supply. This paper highlights the role of nutrient databases in various phases of policy development referencing folic acid as a historical illustration and providing more recent examples of *trans* fat and sodium reduction in the food supply. Limitations of both public and proprietary nutrient databases are considered and improvements to enhance nutrient databases to support policy efforts are suggested.

Keywords: Nutrient databases; policy; USDA; *trans* fat; sodium

1. Introduction

The need for broad policies to improve dietary intake and thus promote health has long been recognized. Prior to the mid-1970s diet-related policies such as those aimed at food fortification, national school lunch and infant feeding programs, focused on ensuring that U.S. citizens consume adequate intakes of foods and essential nutrients. Policies to ensure adequate intake, such as the Food and Drug Administration's (FDA) 1996 policy for the fortification of flour with folic acid to reduce the risk of neural tube birth defects [1], continue to be developed as new research elucidates the importance of certain nutrients in maintaining health.

Since the publication of the National Academy of Sciences (NAS) report on Diet and Health in 1989 [2], increasing attention has been given to the role of diet in chronic disease prevention. Evidence has mounted that improving the American diet can have a tremendous impact in preventing the complex and costly problems of chronic disease and obesity in the United States. For example, in one analysis, Danaei et al. estimated that being overweight or obese was responsible for over 200,000 deaths, high intake of dietary salt for 102,000 deaths, low intake of dietary omega-3 fatty acids for 84,000 deaths, and high

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intake of dietary *trans* fatty acids for 82,000 deaths each year [3]. In recent years, policies such as those that restrict the levels of certain nutrients (e.g., sodium, *trans* fat, added sugars) or food products (e.g., sugar sweetened beverages) have thus been implemented in schools, restaurants and other settings at federal, state and local levels in an effort to reduce the risk of diet-related chronic disease. Policies to inform consumers about the levels of nutrients in certain foods so they can maintain healthy dietary practices (e.g., *trans* fat in packaged food) have also been implemented.

1.1. The importance of nutrient databases for policy development

Merriam Webster has defined policy as "a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions" [4]. Policies can be regulatory, programmatic or procedural. Ensuring that the design and implementation of policies are rational and effective requires an approach that is based on evidence. Such an evidence-based approach is dependent on the availability of accurate, comprehensive and timely data. For diet-related policies, these data include (1) population-based surveys such as the National Health and Nutrition Examination Survey (NHANES) and its dietary intake interview component, What We Eat in America (WWEIA), that estimate what and how much people consume [5, 6] and (2) nutrient databases which provide information on the composition of foods.

The primary nutrient databases used in the United States are those publicly available databases developed and maintained at the U.S. Department of Agriculture (USDA). USDA's Standard Reference (SR) database contains food composition information for more than 8,000 foods in its latest 2012 release of version 25 (SR-25) and serves as the source of data for many other public or commercial nutrient databases [7]. The SR database is comprised largely of food composition data that has been analyzed by USDA or its contractors using validated methods. Sixty-three percent of the data for sodium, for example, in SR-24, was analytical [8]. Proprietary databases containing information on the nutrient content of foods are also available [9,10]. These proprietary databases generally provide manufacturer-supplied food composition data from the Nutrition Facts label (NFL) which is available on most packaged food sold in the U.S.

Combined, dietary surveys and nutrient databases can provide estimates of the nutrients consumed by individuals or populations and thus support policies that address dietary intake. Less commonly recognized is the use of nutrient databases to support the development and monitoring of policies addressing the nutrient composition of the food supply itself. For example, assessing and monitoring the sodium levels of the U.S. food supply is a critical element of policies such as the New York City (NYC)-led National Salt Reduction Initiative (NSRI) which has set target levels for sodium reduction in foods [11].

Nutrient databases (primarily public databases) have been and continue to be recognized among those who use them as the key building block used in analyses to develop sound policies that support a nutritionally-improved food supply and improved dietary intake. This paper highlights the various roles of nutrient databases in policy development and implementation; specifically those policies intended to promote a healthier food supply. Limitations and suggestions for improvements of nutrient databases for policy development are also provided.

1.2. 2. Role of nutrient databases in various phases of policy development

Nutrient databases provide information needed to conduct analyses at all phases of policy development and implementation. These phases can be categorized as: (1) a problem assessment phase to identify the source of a problem and justify the need for a policy or other intervention; (2) a formulation phase to inform the type and content of the policy; and (3) an evaluation or monitoring phase to evaluate the effectiveness of a policy.

2.1 Problem assessment phase

Nutrient databases provide data to investigate the relationship between a specific nutrient or food substance and a specific disease outcome and thus can justify the need for a policy or regulation. While the use of nutrient data alone without biomarker information provides limited evidence to confirm a nutrient disease relationship, such data do provide hypothesis-generating information to justify further study.