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IMPORTANCE OF FOOD COMPOSITION DATA TO NUTRITION AND PUBLIC HEALTH

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Abstract: Adequate nutrition is one of the pillars of public health. Before developing and implementing effective intervention programmes to improve nutrition at the population level, it is important to know the nutritional situation of the target group.

Keywords: Food composition data; nutrition assessment; public health nutrition; dietary guidelines; nutritional epidemiology; food fortification; clinical dietetics; nutrient analysis; food policy; micronutrient deficiency.

Introduction. The estimation of nutrient intake from food consumption requires reliable data on food composition. These data are also the fundamentals of food-based dietary guidelines for healthy nutrition, containing the necessary information on food sources for different nutrients. Furthermore, food composition tables can provide information on chemical forms of nutrients and the presence and amounts of interacting components, and thus provide information on their bioavailability. For some nutrients such as vitamin A, vitamin E and niacin, the concept of equivalence has been introduced to account for differences in the availability and biological activity of different chemical forms.

Non-nutritive food components

Although most food composition tables focus on energy, macro- and micronutrients, interest in non-nutritive components is increasing. Considering the beneficial effects of biologically active secondary plant cell compounds such as polyphenols and carotenoids, more data on these are needed. On the other hand, there are a number of naturally occurring or 'man-made' non-nutritive substances with negative effects, and to control exposure, the main dietary sources must be known. Another aspect is contaminants, which could have detrimental effects on consumers' health. Among these are agrochemicals, industrial pollutants reaching the food chain and substances formed during food preparation. A valid risk assessment requires data on exposure, and thus on the contents of contaminants in foods. However, these data are highly variable and may significantly differ even within narrowly confined regions.

Current food composition databases are far from complete

The fact that composition tables generally do not provide information about the origin of substances found in food can also influence their usability. For example, the German Nutrient Data base does not discriminate between naturally occurring and added sucrose impeding the estimation of added sucrose intake that should be limited. Points of focus: Considering the increasing number of persons relying on community nutrition and catering, healthy menu lines can improve the consumers' diets and contribute to nutrient supply. The development and implementation of appropriate guidelines also need food composition databases (FCBs) to compose meals. The ever-increasing number of new food preparations and manufactured products has resulted in a need for procedures for regularly updated data. Moreover, there is a lack of data particularly for essential trace elements such as copper, chromium or molybdenum and also vitamin K, as well as the already mentioned non-nutritive components. Limited comparability between countries is another issue. Regional differences arise especially from the use of local varieties, different soil quality or meteorological aspects. This variability is further increased with composite meals because of variation in recipes.

Role of Food Composition Data in Developing Dietary Guidelines

National dietary guidelines and recommended nutrient intakes are largely based on food composition information. Estimations of population-level nutrient requirements rely on knowing the average nutrient content of commonly consumed foods. Without reliable FCD, policymakers risk producing recommendations that do not align with the population's actual dietary patterns or nutritional needs.

FCD also supports the development of food pyramids, school meal standards, maternal and child nutrition recommendations, and dietary planning for vulnerable groups. Understanding nutrient distribution across foods allows nutrition professionals to model balanced diets, optimize food group proportions, and promote evidence-based healthy eating habits.

Importance of FCD in Nutritional Epidemiology and Public Health Monitoring

Food composition data plays a critical role in identifying and monitoring nutrition-related diseases such as obesity, type 2 diabetes, cardiovascular illnesses, iron deficiency anemia, and iodine deficiency disorders. Epidemiological studies rely heavily on FCD to assess dietary intake accurately. Tools like food frequency questionnaires, 24-hour recalls, and diet histories require precise nutrient values for all reported foods.

Examples include:

- Assessing iron or folate deficiencies in populations by evaluating the nutrient density of local diets.

- Investigating diabetes risk through foods' carbohydrate content, glycemic index, and glycemic load.
- Monitoring protein-energy malnutrition by determining the energy and protein contributions of staple foods.

In this way, FCD provides a scientific basis for public health interventions, enabling health authorities to track trends, identify at-risk groups, and design effective nutrition programs.

Conclusion: Information about food composition is necessary for the assessment of diet quality and the development and application of food-based dietary guidelines, providing a useful tool for the field of public health nutrition. In this regard, more attention should be paid to the preparation, extension and maintenance of FCBs.

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