Selection of a Dietary Assessment Method in Accordance with an Objective and Evaluation of the Results

Katsushi YOSHITA
Department of Food and Human Health Science, Osaka City University, Graduate School of Human Life Science, Osaka 558–8585, Japan

Summary In recent years, many studies have used epidemiological techniques to investigate the relationships of daily energy and nutrition intake to food intake, and to disease onset and treatment or prevention. Therefore, dietary assessments are now being used in various situations. A range of dietary assessment methods exists, and each has advantages and disadvantages. However, there is no absolute and universally applicable dietary assessment method. The most appropriate method or a combination of methods must be selected in accordance with factors such as the objective of a study and the number of subjects. Moreover, it is necessary to interpret dietary assessment results multilaterally and to grasp dietary habits, elements of a daily lifestyle environment, and physical conditions that could influence the diet.

Key Words dietary assessment, selection of a dietary assessment method, evaluation, comprehensive evaluation

Selection of Dietary Assessment Methods in Accordance with an Objective and Recognition of Limitations

A number of different types of dietary assessment methods exist, each of which has advantages and disadvantages (1). For example, the results of food frequency questionnaires, which were often used in Japan in recent years, cannot be treated as quantitative data. For example, the results of assessments that seek answers regarding semi-quantitative intake volume may involve energy and nutrients for which valid evaluation is not conducted, or the results may not include the subject population or individual attributes and therefore may not guarantee reliability. Thus, one must select the most appropriate method or combination of methods in line with the objectives and the subject population when planning to conduct a dietary assessment.

One must take particular caution when deciding whether energy, nutrient intake volume, and food intake volume needs to be analyzed quantitatively. Moreover, the subject population scale, characteristics, number of people in charge of the assessment, its composition, budget allocated to the entire assessment, and assessment period need to be taken into consideration.

Therefore, it is important to recognize that a fixed dietary assessment method for every situation does not exist and that all currently available dietary assessment methods have limitations (2, 3).

Evaluation of Dietary Assessment Results

There are two main types of evaluation of dietary assessment results, depending on the method employed. First, if an assessment method that can be used to obtain quantitative results (e.g., the food weighing method, or 24-h dietary recall) was conducted appropriately, the evaluation may involve data on dietary reference intake while also taking individual and population attributes into account. However, in addition to assessment dates, assessment season, and tabulation conditions (food database), the evaluation must involve assessment of the status of assessment precision control and of problems such as overestimation and underestimation. In contrast, the data acquired by means of an assessment method that cannot be used to obtain quantitative results (e.g., a food frequency questionnaire, or a dietary history method) cannot be evaluated using data on dietary reference intake. Such results can be used only to identify the relative position (rank) in a population with the same attributes surveyed by means of the same method. One cannot focus only on numerical values and simply compare, for example, the results of a food weighing method with those of a food frequency questionnaire.

Understanding the Dietary Habits Related to Food Intake and Food/Lifestyle Environment

The data obtained via a dietary assessment are affected by various factors. These factors may include a tendency to skip meals, work style, region of residence, dietary restrictions because of an illness, and the knowledge and level of skills related to nutrition and diet. This type of information is necessary not only for interpreting overall results but also for discussing nutritional education and administrative policies for solving the problems related to nutrition. Hence, the necessary information should be analyzed in advance in accordance with the objective of the assessment (3).

The Necessity of Comprehensive Evaluation

Changes in body weight are an extremely effec-
tive index for objective and noninvasive evaluation of the state of energy balance. However, with these data alone, one cannot specifically determine what kind of problems exist in relation to food and nutrient intake and what changes are needed to improve energy and energy-related nutrient intake.

Furthermore, information on individual nutrients cannot be interpreted in simple terms such as the relationship between energy balance and body weight. Quantification of iron data such as blood hemoglobin and ferritin may allow for objective evaluation of the physical state. However, one cannot identify specific problems related to food intake based on this information alone. Furthermore, the related background factors such as dietary habits and the lifestyle environment remain unclear. Thus, even if it includes some fixed errors, the detailed evaluation of a diet is necessary to identify and narrow down the problems in improvement of individual and population nutrition based on the relationship between energy/nutrient intake and dietary intake as well as the assumed status of food intake. The above findings suggest that diet and health status should be evaluated comprehensively, taking into account not only the data acquired via clinical research but also dietary assessment results and the related data that have been gathered from as wide a population as possible (4, 5).

REFERENCES