

## **ANNEX 3.**

# **DIETARY ASSESSMENT METHODS<sup>53</sup>**

Dietary intake data may be collected at the national, household or the individual level. Food supply data, which are normally collected at national level, are useful for purposes, such as tracking trends in the food supply. Food supply data are not useful for identifying individuals or subgroups of the population at risk of inadequate nutrient intakes. The following gives a brief overview of methods to assess dietary intake at household and individual level. Data at these levels allow disaggregated analyses to identify vulnerable groups, in line with a human rights focused approach. There is a wide array of methods of dietary assessment. This is attested to by the long list of references of this Annex. We shall briefly describe these methods. The choice of method in each case should be guided by the purpose of the monitoring, the need for data accuracy and the availability of resources. Dietary assessment methods should also be adapted to the target population and be culturally sensitive.

### **HOUSEHOLD SURVEYS**

The principle methods of assessment at the household level are: food accounts, inventories and household recall. Data generated by these methods are useful for comparing food availability among different communities, geographic areas and socioeconomic groups, and for tracking dietary changes in the total population and within population subgroups. However, these data do not provide information on the distribution of foods among individual members of the household.

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<sup>53</sup> This Annex synthesises a short document on dietary assessment methods that was provided by the IPRFD, and was largely prepared by Dr. Arne Oshaug, Akershus University College, Oslo.

### **Food account method**

Household members keep a detailed record of the quantities of food entering the household, including purchases, home produced food, gifts, and from other sources. No account of stock of foods is taken before or after the study period. It is a widely used method in household budget surveys. As with all dietary assessment methods, the method has both strengths and weaknesses. One main weakness is that data are confined to food brought into the home and does not include food consumed outside home.

### **Inventory method**

This method is similar to the food account method. The additional element is that an inventory of stored food is made at the beginning and end of the survey period.

### **Household record**

In the household record method, the foods presented for consumption to household members are weighed or estimated in household measures. Preparation waste and waste after eating are deducted, as should be food consumed by visitors. This method may be well suited to populations in which a substantial proportion of the diet is home produced rather than purchased.

## **INDIVIDUAL SURVEYS**

Dietary surveys among individuals provide information that can be used to describe differences in intake of food and nutrients between subgroups. These methods depend on the ability of the subject to provide accurate information. Main methods for assessing present or recent diet include records, 24-hours (or 48-hours) recall, and food frequency questionnaires. In order to quantify the intake of foods, some estimate of the weight of consumed food is required. To convert food intake into nutrient intake, the availability of a food composition database/food table is essential.<sup>54</sup> By combining the information of dietary intake and food composition databases/tables one can determine whether the diet is nutritionally adequate or not.

### **Food records**

Food intake is measured at the time of eating. Food intake is quantified by weighing and using household measures. Household members themselves usually record their food intake, although a fieldworker might keep the record. Prospective methods are associated with the fewest number of errors and are generally thought to be the

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<sup>54</sup> For general information on food databases see: [http://www.fao.org/infoods/index\\_en.stm](http://www.fao.org/infoods/index_en.stm)

most accurate methods available. However, the data collection and processing are time consuming and expensive. These methods require a high degree of cooperation from the subjects, which can lead to poor response rates. Also, the need to weigh and record food, or the act of being observed, may alter the intake.

### **24-hour recall**

This widely used method involves asking subjects to recall and describe all intakes of foods and drinks in the previous 24 hours. This method usually requires a trained fieldworker/dietician/nutritionist to interview subjects, to assess portion weights and make appropriate enquires about types of food and drinks consumed and possible omissions of, for example, snacks. It is a much used dietary assessment method because it is simple, quick and inexpensive, but it is prone to reporting errors, including biased or inaccurate recalls of food intake and portion sizes. It requires a good methodological knowledge in order to transform the interview data of the dietary intake to nutrients. Applied once, it yields no information on day-to-day variation on food or nutrient intake.

### **Food frequency questionnaires (FFQ)**

These questionnaires provide information about how often certain foods or foods from given food groups, were eaten during a time interval in the past, usually day, by either the household or an individual. The questionnaire can be self-administered or be administered through a short personal interview. The food list may range from a few questions to capture intake of selected foods and nutrients, to a comprehensive list to assess the total diet. The frequency responses can be open-ended or multiple choice, ranging from several times per day to number of times per year, depending on the type of food.

FFQ can be qualitative with no information on portion size, semi-qualitative with standardised portion size estimates (as predetermined by the interview team), or quantitative where the respondents estimate portion size. When portion sizes are described by the respondents themselves, different measurement aids have been used, such as photographs, drawings or household measures. Portion size information is necessary to quantitatively assess the intake of foods and nutrients. Standard portion sizes greatly simplify the administration and processing of the FFQ.

The advantages include simpler and quicker administration and processing, and subsequently lower costs as well as less burden for the respondents than alternative methods. The method is generally accepted as being suitable for measuring typical diets and with the purpose of ranking individuals according to intake. Inaccuracies may result from an inadequate listing of possible foods, errors in estimating portion size and the usual frequency of food consumption.

Dietary diversity has been used as a simple measure of diet quality, for which there is no standard definition. More comprehensive diet quality indexes have been developed for monitoring the population's adherence to national dietary guidelines. Considerable diversity in the daily diet is thought to be necessary for adequate nutrient intakes, to lessen the chances of deficient or excessive intake of a single nutrient, and to diminish exposure to food contaminants. Past studies have shown that nutrient intakes and children's nutritional status are positively related to the number of different foods consumed.

FFQ have been widely used in large epidemiological studies or to calculate a dietary diversity score which is simply the sum of the number of food groups consumed during the reference period. The larger this number, the more diversified the food intake is. Either the total score or the frequency of intake of foods by standardised food groups can be reported, or both. There is some evidence that the household dietary diversity score is positively correlated with household dietary energy availability, and that the individual dietary diversity score is positively correlated with the adequacy of micronutrient intake of the individual.

## **VALIDITY OF DIETARY ASSESSMENT METHODS**

Each dietary assessment method has its advantages and limitations, and none of them measure food intake without errors. Independent tests of validity are therefore necessary to understand the relationship between what the method actually assesses and what it intends to measure. This is important for the interpretation of the assessment results. The general model of validation for dietary assessment methods is to compare one method (test method) with another, which is considered more accurate (reference method).

The purpose of validation studies is to identify errors in collected dietary data and to assess their potential impact on assessment findings. A questionnaire's instruction, contents and wording, the skill of the interviewer, and the research setting may all introduce response errors, including inaccurate recalls by the respondent (intentional or unintentional) of foods eaten, of frequency of consumption, and of portion size. Errors can also arise from coding errors and errors in food composition tables. Errors and day-to-day variability in dietary assessments will affect the validity and reproducibility of the measurements.

Validity measures the degree to which a method measures what it purports to measure. Validity is associated with systematic (i.e. non-random) measurement errors, or the tendency of a measurement to produce an average over- or underestimation of what the method is intended to measure, due to systematic response bias. Reproducibility is associated with random error. Random error can be due to random bias in reporting by the same individual on different days. Random errors may cancel each other out, but will increase the variance of estimated mean intake and reduce statistical power. High reproducibility of a method does not imply high validity, but a method with low reproducibility will also have low validity.

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