Population share with adequate nutrients

Overview

This indicator of diet quality estimates the nutrient intake adequacy of a population by using both individual-level dietary intake data and Food Balance Sheet [1] (FBS) data. Rather than only focusing on the availability of energy, this indicator seeks to better understand the level of consumption of key nutrients within a population. This indicator is also included in a suite of indicators used to assess the environmental and nutritional sustainability of food systems developed by Gustafson et al., 2016 [2]. This indicator is considered an 'emerging indicator' because it has not been fully validated and is not in common use.

Method of Construction

This indicator requires the use of FBS [1] data and food composition tables to derive an estimate of the quantities of key nutrients available in a country's food supply. FBS [1] data can be accessed on the Food and Agriculture Organization's (FAO) FAOSTAT [3] website. FAO calculates the national estimate of total food availability using data from a number of sources, including government agencies, marketing authorities, and industrial/manufacturing surveys, among others (FAO, 2001 [4]). This national estimate is calculated as the sum of the elements of supply (production quantity, import quantity, and stock variation) minus the elements of utilization (export quantity, food manufacturing, feed, seed, waste, and other uses).

Food composition tables from the country or region of study should be used (if available) in conjunction with FBS [1] data to estimate nutrients that vary depending on local varieties, conditions of production (e.g. soil composition), or other factors. For each nutrient, a population distribution of intake is constructed around the mean per capita nutrient availability value (calculated with FBS [1] and food composition table data) by using a coefficient of variation (CV) equal to the inter-individual CV of nutrient intakes obtained through a survey of a representative sample of individuals in the study population. The percentage of the population with intakes above an adequate level can then be calculated using the Estimated Average Requirement (EAR) fixed cut-point method. For more detailed information on how to construct this indicator, see Arsenault et al. (2015 [5]).

Uses

This indicator is used to estimate the proportion of people within a population who are consuming key nutrients at or above an adequate level, such as the EAR, as defined by the US Institute of Medicine (Arsenault et al., 2015 [5]). The information derived from this indicator can be used to identify gaps in nutrient availability in the food supply and population needs, reflecting nutrient availability in the food supply of a population, which can be used in targeted interventions to increase the consumption and availability of foods that are significant sources of certain nutrients in the food supply.

Strengths and Weaknesses

One benefit of this indicator is its ability to provide a national-level estimate of diet quality that requires less cost and

effort than a nationally representative individual-level dietary survey. However, this method may not be suitable for assessing iron intakes, since requirements are not normally distributed, and determining iron bioavailability is difficult without information on the whole diet. In addition, this indicator requires the assumption that the per capita nutrient availabilities (calculated using FBS [1] data) approximate the mean per capita intakes of the population (Arsenault et al., 2015 [5]). This assumption may not always be accurate, since FBS [1] data represent availability, not consumption, and cannot detect disparities in nutrient consumption across population groups or seasons. Another drawback of this indicator is that it addresses meeting intake thresholds, but does not address overconsumption of nutrients at potentially dangerous or unhealthy levels (Gustafson et al., 2016 [2]).

Data Source

This indicator uses data from FBS [1] in combination with Food Composition Tables. National or regional Food Composition Tables should be used to identify the nutrient contents of the foods and can be found at FAO's International Network of Food Data Systems (INFOODS [6]) or the International Life Science Institute's (ILSI) World Nutrient Databases for Dietary Studies (WNDDS [7]). The indicator also requires individual-level dietary intake data as well as inter-individual estimates of variation from surveys of the population in order to estimate the population distribution of intake.

Links to guidelines

- Arsenault et al., (2015). "Improving nutrition security through agriculture: an analytical framework based on national food balance sheets to estimate nutritional adequacy of food supplies" [8]

Food Security Dimensions

- Quality [10]

Data Collection Levels

- National [11]

Data Sources and Methods

- Food Balance Sheets (FBS)
- Food Composition Databases

Requires Food Composition Database

- Yes [12]