Household adequacy of fruit and vegetable consumption

Overview

Low fruit and vegetable consumption is one of the leading contributors to the global burden of non-communicable disease and death (Lim et al., 2013 [1]). A 2003 Food and Agriculture Organization (FAO) and World Health Organization (WHO) joint report defines adequate fruit and vegetable consumption as an individual daily intake of 400 grams of fruit and vegetables (or the equivalent of five servings). This household-level indicator provides a measure of diet quality and can be used to understand diet patterns. Since this indicator uses Household Consumption and Expenditure Survey (HCES) data, analyses can be disaggregated to analyze patterns between regions, income groups, and sub-populations.

Method of Construction

HCES [3] data are used to construct this indicator by summing the total weight (in grams) of fruits and vegetables consumed by the household as reported by the respondent. This total can then be divided by the number of household members, and then divided by the number of days within the survey recall period. The resulting value is the number of grams of fruits and vegetables consumed per capita per day for the household (with infants and children included as household members). If this number is at or above 400 grams/capita/day, the household is classified as having adequate fruit and vegetable consumption. If it is below 400 grams/capita/day, the household is considered to have inadequate fruit and vegetable consumption.

This indicator is one of several indicators included in the ADePT-FSM [4] (Food Security Module) software package, a free standalone software developed by FAO and the World Bank, that allows users to easily derive food security indicators from household survey data. The software download and corresponding documentation can be found on the FAO [4] website.


Uses

This household-level indicator can be used to identify inadequacy of fruit and vegetable consumption between population sub-groups, including those based on household income, gender of the household head, and different geographic areas. It can be used in studies to identify the potential socioeconomic and cultural determinants of inadequate fruit and vegetable consumption, which can advise local or national strategies to encourage consumption and improve dietary practices (Jaime et al., 2005 [8]).
Strengths and Weaknesses

This household-level indicator reflects an important aspect of dietary quality based on the quantity of consumption of fruits and vegetables. Other indicators of adequacy of fruit and vegetable consumption may use the consumption of five servings per day as the definition of adequacy, rather than 400 grams (Hall et al., 2009 [9]), but the concept of serving size may differ by country. These indicators may be subject to bias due to the considerable variability of definitions of fruits, vegetables, and portion sizes between countries (Agudo, 2004 [10]), though the data from HCES [3] could be classified by the researcher into standardized categories of fruits and vegetables. A benefit of using grams instead of serving sizes is that it can improve comparability across countries.

This indicator is based on the WHO recommendation that all individuals in a population should consume at least 400 grams (5 servings) of fruits and vegetables per day. Because this measure is applied to household-level data, there is no consideration of individual consumption as the indicator is based on the total amount of fruits and vegetables per household divided by the number of individuals. The recommendation of 400 grams does not take into account different individual needs depending on age and sex, and the variation in the recommended nutrient intakes. Food-based national dietary guidelines should be referenced for more detailed information and requirements for individual age/sex groups (FAO, 2018 [11]). In addition to these other limitations, this indicator uses data collected from one individual within the household who is reporting everyone’s consumption, which may not be accurate, especially given the increasing importance of food consumed away from home, particularly in urban areas. Because this is a household-level indicator, it can be used to compare diet quality across households, but should not be used to draw conclusions about individuals within the same household or about specific age and sex groups in the population.

Data Source

HCES [3] data can be used to calculate this indicator. The World Bank Microdata Library [12] has the most comprehensive and publicly accessible repository of data (World Bank Microdata Library [12]). Otherwise, data can be accessed—often for a fee—from the National Statistics Office, though each country has its own policies and procedures. The International Household Survey Network (IHSN [13]) is an informal network to promote data standards and dissemination. 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 [14]) or the International Life Science Institute’s (ILSI) World Nutrient Databases for Dietary Studies (WNDDS [15]). In addition, FBS [7] data could be used to calculate a similar indicator, such as national fruit and vegetable availability in the food supply [6]. Alternatively, market data such as Euromonitor [16] could be used to calculate the fresh food retail volume [17], or individual-level data such as 24-hour Dietary Recall [18] or a Food Frequency Questionnaire (FFQ), could be used to calculate consumption of specific food groups (e.g. fruits and vegetables).

Links to guidelines


Links to illustrative analyses


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Food Security Dimensions

- Quality [23]

Data Collection Levels

- Household [24]

Data Sources and Methods

- Household Consumption and Expenditure Surveys (HCES)

Requires Food Composition Database

- No [25]