

منظمة
الأغذية والزراعة
للأمم المتحدة

联合国
粮食及
农业组织

Food and Agriculture
Organization of the
United Nations



Organisation des
Nations Unies pour
l'alimentation et
l'agriculture

Продовольственная и
сельскохозяйственная
организация
Объединенных Наций

Organización de las
Naciones Unidas para la
Agricultura y la
Alimentación

AFRICAN COMMISSION ON AGRICULTURAL STATISTICS

Twenty-eighth Session

Pretoria, South Africa: 4 – 8 December 2023

AGENDA ITEM 11

FOOD AND DIET DOMAIN

Ana Moltedo, Fernanda Grande, Aydan Selek, Pauline Allemand, Juan Pablo Parraguez, Adrienne Egger, Salar Tayyib, Carlo Cafiero, Bridget Holmes

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

SUMMARY

The emergence of the COVID-19 pandemic, together with country-wide responses aimed at reducing the disease transmission, has underscored the gap in what we know about people's dietary habits. The High-Level Panel of Experts on Food Security and Nutrition (2022) highlighted that there are still data gaps on people's food consumption, nutrient intake, and their nutritional status. According to the experts, often policy makers are not aware of the existence of data available or do not use the data appropriately.

Furthermore, sources of dietary data are not typically harmonized. Comprehensive dietary data are paramount to understand and explain the diverse forms of malnutrition that may result from food insecurity. Moreover, these data play a crucial role guiding agrifood systems policies. In this context, three FAO divisions (the Food and Nutrition Division, the Statistics Division and the Fisheries and Aquaculture Division) embarked on an innovative joint effort to harmonize dietary data, increase its dissemination, and improve the utilization and comparison of food availability, food consumption, and diet quality statistics and indicators. This initiative brings together, for the first time, statistics from individual food consumption surveys, women's dietary diversity data, household consumption and expenditure surveys (HCES), and supply utilization accounts (SUA); and disseminate the statistics through a common "Food and Diet" domain on FAOSTAT.

1. INTRODUCTION

FAO's mandate includes raising levels of nutrition and ensuring access to safe, nutritious, and sufficient food for all. It is the custodian agency of the Sustainable Development Goal's (SDG) indicators for monitoring progress on target 2.1 (End hunger and ensure access to safe, nutritious and sufficient food), along with the World Health Organization (WHO), the lead agency responsible for the implementation of the United Nations Decade of Action on Nutrition.

Since 2017, FAO's annual flagship publication "The State of Food Security and Nutrition in the World" has reported on progress towards eliminating hunger and food insecurity (SDG target 2.1) and all forms of

malnutrition (SDG target 2.2). These publications present evidence of the link between these two SDG targets. Furthermore, FAO spearheads work on sustainable agrifood systems for healthy diets and improved nutrition. FAO has the potential to enhance its leadership in promoting nutrition, food security and sustainable food systems within the framework of the Article I of its constitution, which states that one of the key functions of the Organization is “to collect, analyze, interpret and disseminate information relating to nutrition, food and agriculture.”

Diets are the core link between food systems and their health and nutrition outcomes. They are also the vital element that connects SDG targets 2.1 and 2.2. Policy makers need to ensure that all parts of the food system work together to deliver high-quality diets and prevent food insecurity and malnutrition. Robust data on food availability, food consumption and diet quality are needed to help explain the diverse forms of malnutrition that can potentially result from food insecurity, as well as to guide agrifood systems policies. A new “data revolution” on food and diets is needed.

The COVID-19 pandemic and the countries’ responses to it highlighted the lack of data on diets and dietary quality. Such data would have been invaluable to better quantify the impact of the pandemic on food availability and diets, and by extension, the risk of malnutrition in all its forms. The High-Level Panel of Experts on Food Security and Nutrition (2022) highlighted that there are still data gaps on people’s food consumption, nutrient intake, and their nutritional status. According to the experts, often policy makers are not aware of the existence of data available or do not use the data appropriately.

2. MAIN BODY OF THE DOCUMENT

Though comparable statistics and indicators on food security and the nutritional status of individuals are available, data on food consumption and dietary trends (particularly from low-income countries) are currently scarce, not easily accessible, or not comparable, making them hard to interpret (Micha et al., 2018). For example, the most recent and relevant study on the burden of disease related to diet, the “Health effects of dietary risks in 195 countries, 1990–2017” (GBD 2017 Diet Collaborators, 2019), is based on a database of modelled dietary data that relies on estimates from various non-harmonized data sources.

The international nutrition community has long advocated for increased and higher-quality dietary data (Development Initiatives, 2018; Global Panel on Agriculture and Food Systems for Nutrition, 2016), including disaggregated data at subnational level. In recent years, several initiatives have been launched with the goal of filling the global dietary data gap. The Food Systems Dashboard (2023) is one such initiative, which brings together food-systems data from multiple sources in a user-friendly platform. Although a relevant amount of its data comes from FAO, such data still lacks harmonization across the various sources.

Three FAO’s divisions (the Food and Nutrition Division-ESN, the Statistics Division-ESS and the Fisheries and Aquaculture Division-NFI), which are responsible for food supply data from supply utilization accounts (SUA), food apparent consumption data from household consumption expenditure surveys (HCES), and individual-level data on food consumption (including the Minimum Dietary Diversity for Women [MDD-W] indicator), have identified several data gaps. These gaps include:

- (a) Statistics from the various sources were not harmonized and, therefore, not comparable. Divergences in estimates result from differences in data collection methods and, importantly, from the lack of harmonization in the definition of food groups and data processing.
- (b) Food consumption estimates from HCES were not previously disseminated. The FAO Statistics Division has been processing HCES data for decades to estimate the Prevalence of Undernourishment (PoU), but food consumption statistics have thus far not been published.
- (c) Food Balance Sheets (FBS), which are created from SUA data, are heavily utilized by nutrition and economic researchers. However, in many cases the information is used and interpreted inappropriately. It was also limited in scope, covering only energy, protein and fat. There is a pressing need to better communicate and educate users on the appropriate uses of statistics on food availability and other dietary-related data.
- (d) There was no unified, integrated platform for all dietary-related statistics. Instead of creating new platforms, FAOSTAT (FAO, 2023a) is the most appropriate platform to publish harmonized statistics from the different data types.

Therefore, ESS, ESN, and NFI, embarked on an innovative joint effort to harmonize the processing of dietary data, increase its dissemination and improve the utilization of comparable food supply, food consumption, and diet quality statistics and indicators. This enhanced partnership between three FAO divisions positions FAO as the reference institution for providing the most up-to-date, reliable, harmonized and policy-relevant statistics and indicators on food supply, food consumption and diet quality globally.

The statistics are presented by geographic areas, sex-age groups and by food groups, from three distinct data sources: (a) supply utilization accounts; (b) household consumption and expenditure survey; and (c) individual quantitative dietary data. It also presents statistics on women's dietary diversity, as derived from the application of the Minimum Dietary Diversity for Women (MDD-W) indicator.

The SUAs provide an overview of a country's food, agriculture, fisheries, and aquaculture sectors for a calendar year (FAO, 2023b). The SUAs refer to individual products and their respective quantities, covering around 494 food items. Of these items, 435 (88%) correspond to crops and livestock food products and 59 (12%) are associated to fisheries and aquaculture products. They are based on a balance between food supply and food utilization, where Supply equals Production plus Imports minus Change in Stocks, and Utilization comprises the addition of Exports, Food, Food-Processing, Tourist Food, Losses, Feed, Seed, Non-Food-Industrial and Other Uses. The Food component refers to products' quantities available in the country for human consumption.

$$\text{Supply} = \text{Production} + \text{Imports} - \text{Changes in Stock}$$

$$\text{Utilisation} = (\text{Exports} + \text{Foods} + \text{Food Processing} + \text{Tourist Food} + \text{Losses} + \text{Feed} + \text{Seed} + \text{Nonfood industrial} + \text{Other uses})$$

The label "household consumption and expenditure survey" is used as an umbrella term for household-level surveys developed to inform economic policies, such as "Household Budget Surveys", "Household Income and Expenditure Surveys" and "Living Standard Measurement Surveys". These surveys collect information on household characteristics (e.g., region and urban-rural), household members characteristics (e.g., sex, age, education, food and non-food expenditures), and food quantities consumed and/or acquired during a reference period. It is worth noticing that these surveys were not purposely defined for food security analysis, but they have been widely used to assess the "access" dimension of food security (Russell et al., 2018). The microdata for the HCES were downloaded from the World Bank Central Data Catalog (World Bank, 2023) and national statistical websites. In cases where the microdata was not available online, we received access to the data and permission to upload the aggregate statistics from national statistical offices.

Individual quantitative dietary data are crucial for gaining insights into food consumption patterns, disaggregated by sex and age. Such data are key for developing evidence-based policies and programs for agriculture, nutrition, and food. The FAO/WHO Global Individual Food consumption data Tool (GIFT) (FAO and WHO, 2023) was used as the source for individual quantitative dietary data. The datasets available on FAO/WHO GIFT were screened for inclusion in the F&D Domain, with surveys that were statistically representative at national level being selected. The F&D domain database for individual quantitative dietary data will be completed as new nationally representative datasets are shared through FAO/WHO GIFT.

The data sources for statistics related to the Minimum Dietary Diversity for Women (MDD-W) indicator included in the F&D Domain are nationally representative surveys, sourced from The Demographic and Health Survey (DHS) Program country reports, the Living Standards Measurement Study from the World Bank, and retroactively calculated statistics from individual quantitative dietary data from FAO/WHO GIFT platform. The MDD-W indicator is a food group diversity indicator developed by FAO and partners that reflects one key dimension of diet quality – micronutrient adequacy. The MDD-W can be used for assessing diet diversity, evaluating the impact of programs, informing policies and setting targets. It is easily integrated into large-scale surveys, existing data collection platforms, monitoring and evaluation frameworks, and research studies measuring dietary diversity (FAO, 2021).

The "Food and Diet" domain, published on FAOSTAT, presents harmonized statistics from supply utilization accounts and household consumption and expenditure surveys. These statistics are harmonized in terms of the: (a) selection of high-quality food composition tables based on the FAO/INFOODS evaluation framework

(Charrondiere et al., 2023), (b) selection of the nutrients based on health relevance and their availability in food composition tables, (c) use of standardized components identified by the FAO/INFOODS tagnames, and (d) use of FAO/INFOODS food matching guidelines (2012). Food group statistics from these data types are further harmonized with those from individual level data by using the FAO/WHO GIFT nutrition-sensitive food group classification (FAO and WHO, 2021).

The statistics from the individual quantitative dietary data benefit from the comprehensive harmonization process undertaken by FAO/WHO GIFT platform. To be inserted in the FAO/WHO GIFT platform, dietary data undergo a process of retrospective harmonization, which comprises several steps, including: (a) the use of the FoodEx2 classification to harmonize the food list; (b) the disaggregation of mixed dishes into their respective ingredients; (c) the data formatting to a standard template; and (d) the execution of data consistency and quality checks.

The domain also presents statistics on the Minimum Dietary Diversity for Women (MDD-W) indicator. The MDD-W statistics were extracted from published DHS reports, retrospectively calculated from FAO/WHO GIFT's survey data, and a household consumption and expenditure survey. The calculation process involved several steps. Firstly, the selection of eligible subjects (women of reproductive age) sets the sample to be used. Subsequently, the classification of reported food items into distinct MDD-W food groups was performed, using the EFSA's FoodEx2 classification system as a standardized framework. This was followed by the computation of the food group diversity score (FGDS) for each subject, creating a discrete scale ranging from 0 to 10. With this scale, the overall prevalence of women reaching MDDW ($FGDS \geq 5$) was calculated. Additionally, the consumption of each food group, including the 10 mandatory MDD-W food groups and the so called “unhealthy” food groups were also estimated. All statistics were calculated at rural, urban and national level.

Table 1 presents the nutrients and Table 2 the statistics and indicators disseminated through the “Food and Diet” domain on FAOSTAT by type of dietary data.

Table 1. Nutrients disseminated through the “Food and Diet” domain on FAOSTAT by type of dietary data.

Nutrient	Supply utilization accounts (SUA) data	Household consumption and expenditure (HCES) data	Individual food consumption data
<i>Energy</i>	x	x	x
<i>Protein</i>	x	x	x
<i>Fat</i>	x	x	x
<i>Carbohydrates available (i.e. excluding fiber)</i>	x	x	x
<i>Dietary fiber</i>	x	x	x
<i>Calcium</i>	x	x	x
<i>Iron</i>	x	x	x
<i>Magnesium</i>	x	x	x
<i>Phosphorus</i>	x	x	x
<i>Potassium</i>	x	x	x
<i>Zinc</i>	x	x	x
<i>Vitamin A [mcg RE and mcg RAE]</i>	x	x	x
<i>Thiamin</i>	x	x	x
<i>Riboflavin</i>	x	x	x
<i>Vitamin C</i>	x	x	x
<i>Vitamin B6</i>	*	x	x
<i>Vitamin B12</i>	*	x	x
<i>Cooper</i>	*		
<i>Selenium</i>	*		
<i>Total saturated fatty acids</i>	*		

<i>Total monounsaturated fatty acids</i>	*		
<i>Total polyunsaturated fatty acids</i>	*		
<i>Docosahexaenoic acid n-3 (DHA)</i>	*		
<i>Eicosapentaenoic acid n-3 (EPA)</i>	*		

*Statistics available for fisheries and aquaculture products only.

Table 2. Statistics and indicators disseminated through the “Food and Diet” domain on FAOSTAT by type of dietary data.

Statistic	Level of disaggregation	Supply utilization accounts (SUA) data	Household consumption and expenditure (HCES) data	Individual food consumption data	Data used to compute the MDD-W indicator
		By food group and for “all food groups”			
<i>Average nutrient supply</i>	National	x			
<i>Average apparent nutrient intake</i>	National		x		
	Urban/Rural		x		
	Sub-national		x		
	Income group		x		
<i>Average nutrient intake</i>	National			x	
	Urban/Rural			x	
	Sub-national			x	
<i>Confidence Interval of average apparent nutrient intake</i>	National		x		
	Urban/Rural		x		
	Sub-national		x		
	Income group		x		
<i>Food consumption, all subjects</i>	National		*	x	
	Urban/Rural		*	x	
	Sub-national		*	x	
	Income group		*		
<i>Food consumption, consumers only; Percentage of consumers; and Top 3 most consumed food items</i>	National			x	
	Urban/Rural			x	
	Sub-national			x	
<i>Percentage of women achieving MDD-W (MDD-W%)</i>	National				x
	Urban/Rural				x
	National				x

Percentage of women consuming each food group (consumption %)	Urban/Rural					x
---	-------------	--	--	--	--	---

*Statistics are not available for “all food groups”.

Figures 1, 2, 3, and 4 present examples of the type of statistics published on the “Food and Diet domain”.

Figure 1. Map presenting levels of calcium supply in countries in 2021, based on SUA data.

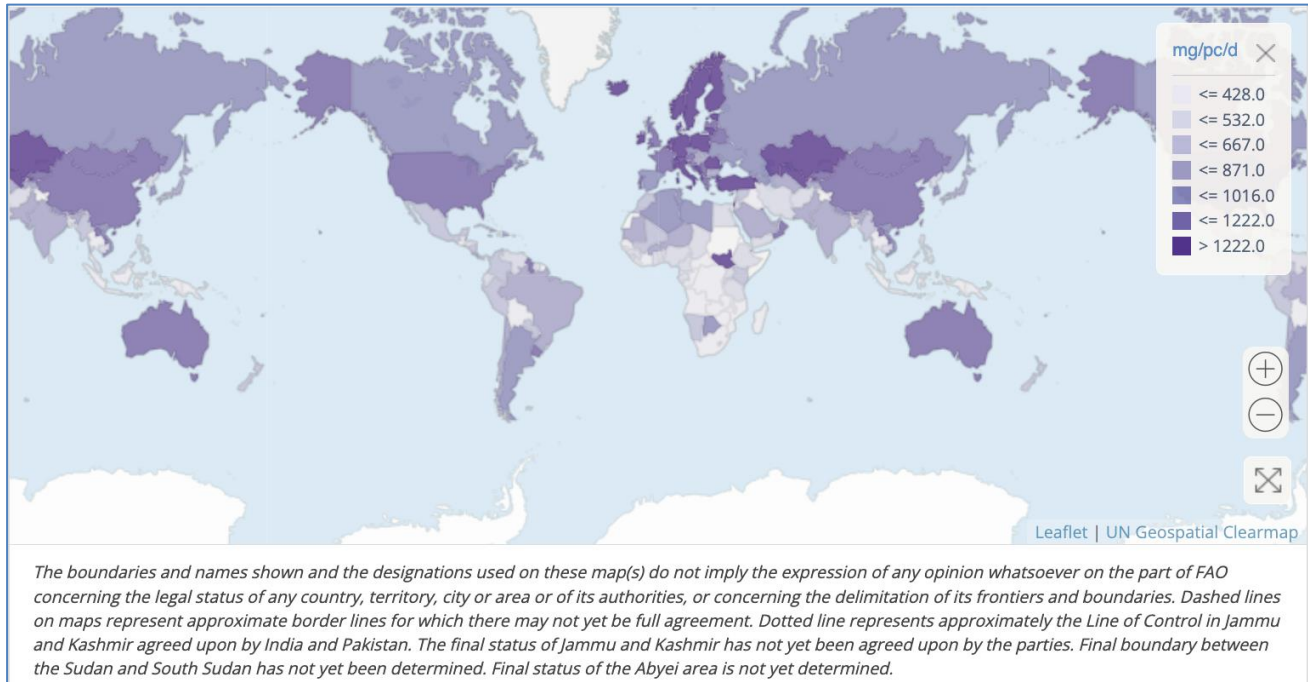


Figure 2. Vitamin B12 apparent intake, from all food groups, by lowest and highest income quintile groups, based on HCES data from Africa.

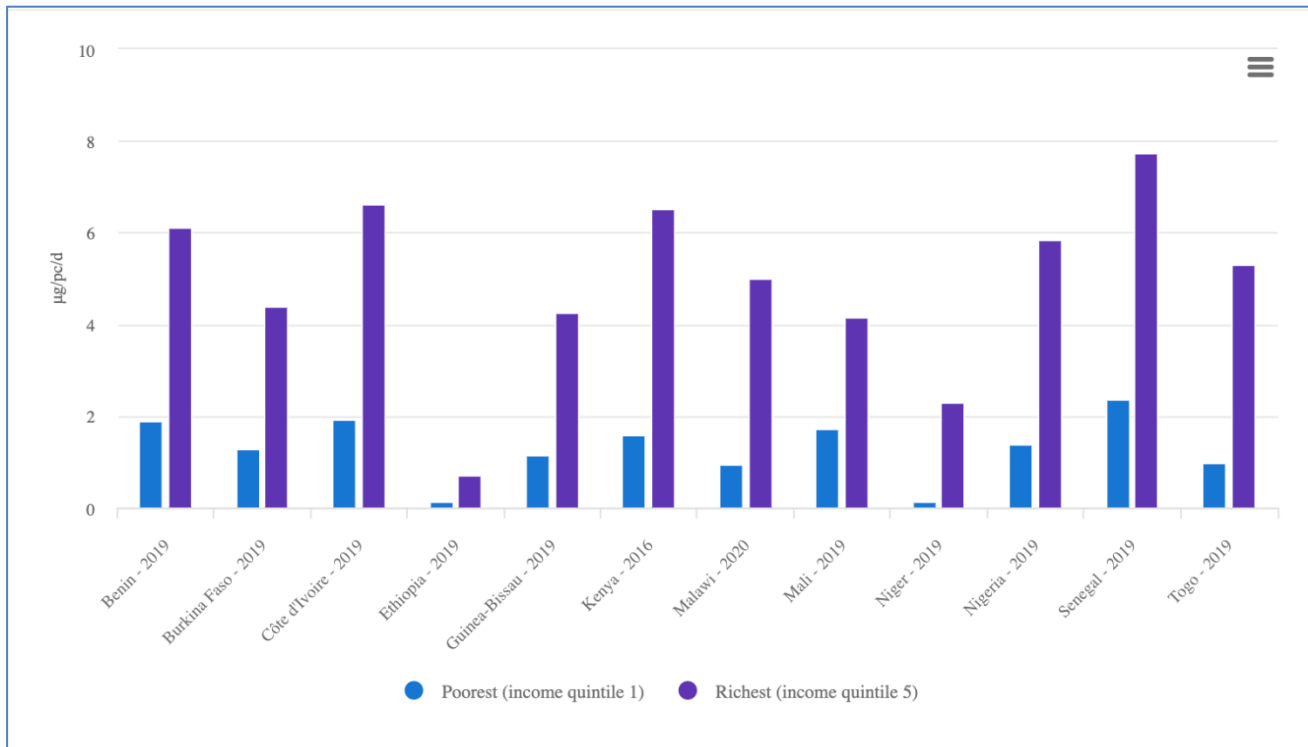


Figure 3. Contribution of food groups to total energy intake, by sex in Mexico in 2012, based on individual quantitative level data.

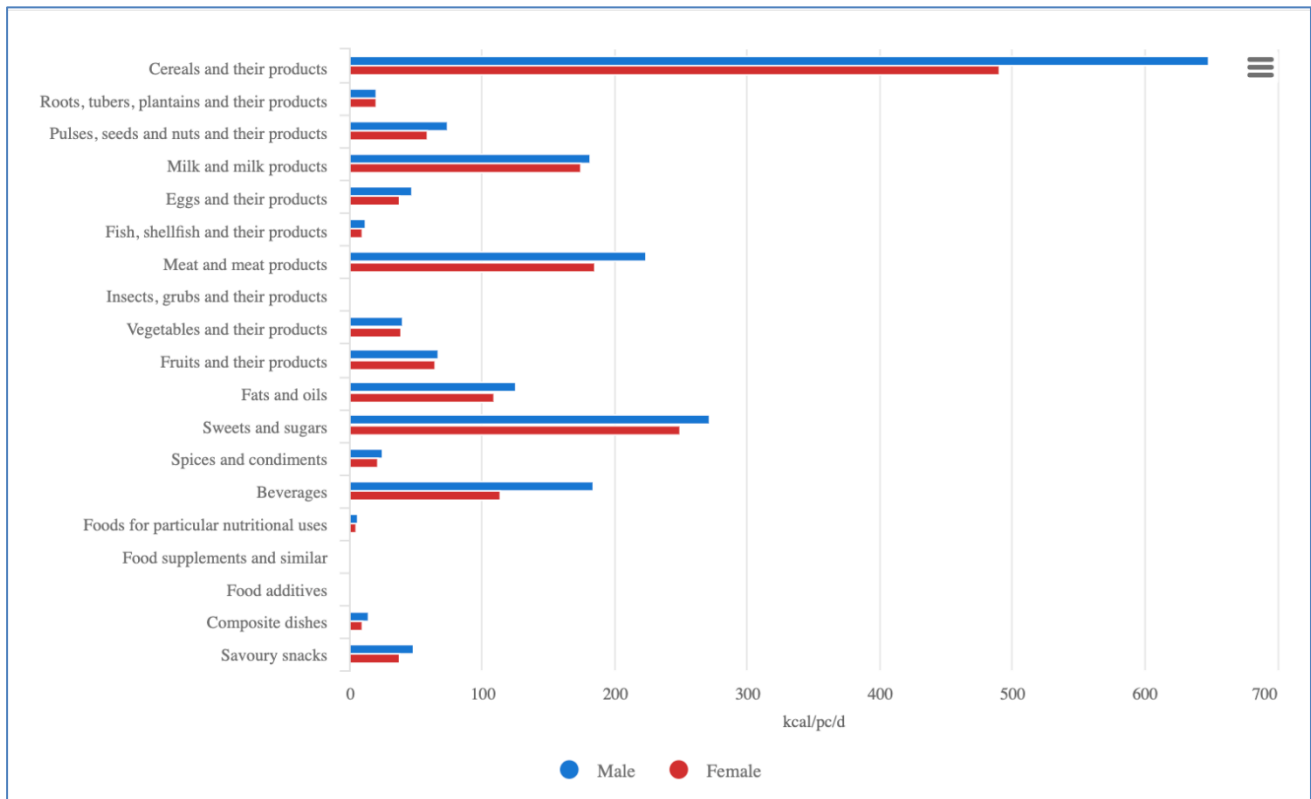
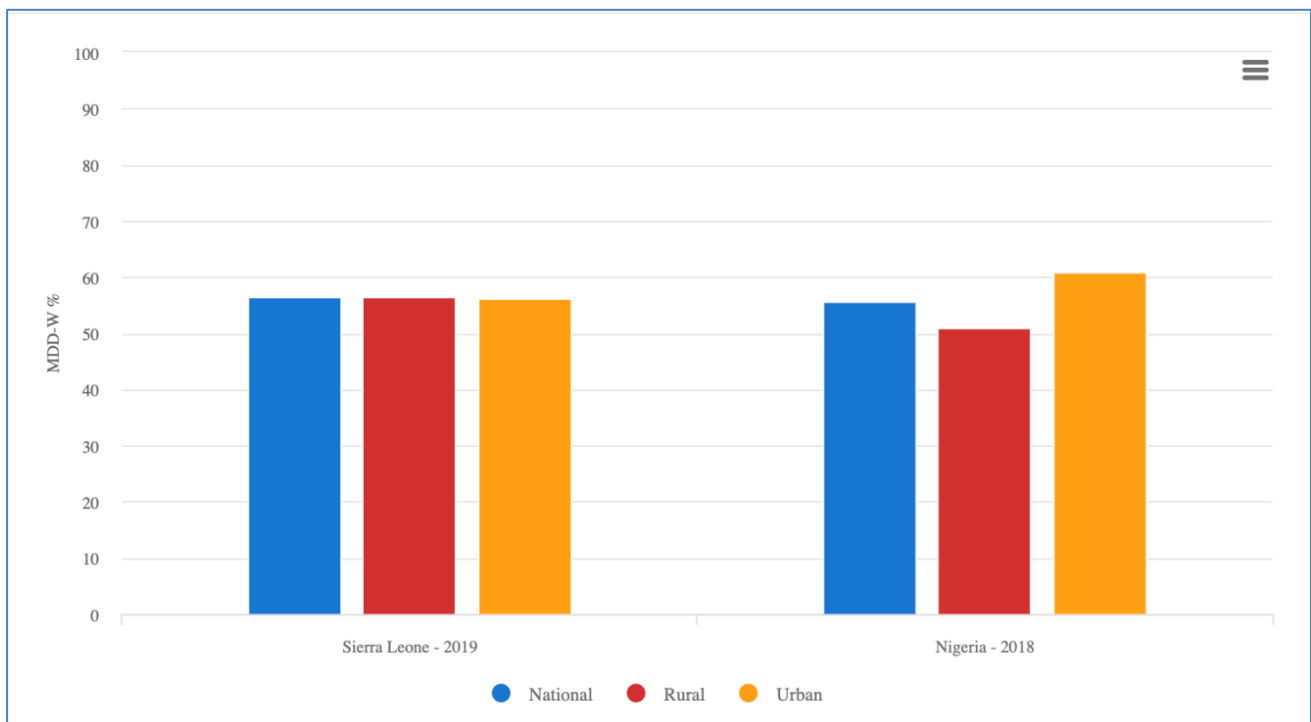


Figure 4. Prevalence of non-pregnant and non-lactating women of reproductive age achieving MDD-W.



3. CONCLUSIONS AND RECOMMENDATIONS

The Food and Diet Domain has enabled the sharing of statistics on four distinct but complementary types of dietary data. This initiative, involving the FAO Statistics, Food and Nutrition, and Fisheries and Aquaculture

Divisions, has enabled the establishment of this domain which aims to serve multiple stakeholders and fill data gaps. Prior to the launch of the “Food and Diet” domain, only statistics on supply of energy and macronutrients (protein and fat) were available on FAOSTAT. As a result of the development of a new ‘Global Nutrient Conversion Table’ (NCT) for the SUA data, led by The FAO Food and Nutrition Division (ESN), an update and extension of the available published statistics is now available. The domain currently provides food and nutrient statistics from HCES conducted in 14 out of 54 African countries (26%). It is important to note that African countries have the potential to start narrowing data gaps by optimizing the use of HCES data already collected in the country. By leveraging existing data from these surveys, data gaps could be narrowed minimizing efforts and invested money, while at the same time enhancing national staff capacities in producing food and nutrient statistics.

The domain also presents statistics related to the MDD-W indicator, which has been included as a core indicator into the Demographic and Health Surveys (DHS) around the world. The inclusion of this simple and short list of questions in forthcoming DHS will provide valuable insights into the dietary diversity and serve as a proxy for micronutrient adequacy level among women of reproductive age in the countries.

The FAO/WHO GIFT platform serves as the source for individual quantitative dietary intake data for the “Food and Diet domain”. Only statistics for those surveys that are nationally representative are shared through the Food and Diet Domain. The FAO/WHO GIFT platform supports national institutions, academia, and NGOs by facilitating the sharing of individual-level microdata, providing trainings on data harmonization and use. The platform also promotes the use of individual food consumption data to inform policies and actions. Publishing microdata on this platform contributes to reducing data gaps by also presenting statistics on food consumption.

4. QUESTIONS AND INVITATIONS TO AFCAS MEMBER COUNTRIES

- Has a Household Consumption and Expenditure Survey been conducted in the country or is it about to be conducted? If you are interested in receiving training to process food consumption data for: (a) computing food and nutrient statistics, (b) computing the prevalence of undernourishment, and/or (c) publishing the food and nutrient statistics on the “Food and Diet” domain, contact Mr. Carlo Cafiero by sending an email to Food-Security-Statistics@FAO.org.
- If you are interested in learning more about MDD-W and assessing dietary diversity and levels of micronutrient adequacy among women of reproductive age, contact Ms. Bridget Holmes by sending an email to Nutrition-assessment@fao.org.
- Has an Individual Quantitative Dietary Intake Survey been conducted in the country or is it about to be conducted? If you are interested in publishing the data through the FAO/WHO GIFT platform and receive training on data harmonization, contact Ms. Bridget Holmes by sending an email to Nutrition-assessment@fao.org.
- If you are interested in publishing food and nutrient statistics from Individual Quantitative Dietary Intake Surveys or from surveys collecting data on MDD-W on the “Food and Diet” domain, contact Ms. Bridget Holmes by sending an email to "Nutrition-assessment@fao.org.

5. ACKNOWLEDGEMENTS

The authors are very grateful to Amanda Gordon and Mario Triani, from the FAOSTAT team in the FAO Statistics Division, for developing the “Food and Diet” domain on FAOSTAT. The authors are also grateful to other FAO colleagues for their relevant contributions: Victoria Padula De Quadros, Agnieszka Balcerzak, Doris Rittenschober, Giles Hanley-Cook (Nutrition Assessment team in the Food and Nutrition Division); Filippo Gheri, Adeeba Ishaq, Sara Zakaryan, Amadou Ba, Talent Manyani, Firas Yassin, Abdul Sattar (Food Security and Nutrition Statistics team in the Statistics Division); Dominique Habimana (Crops, Livestock and Statistics Team in the Statistics Division); Stefania Vannuccini (Statistics team in the Fisheries and Aquaculture Division); and Cristina Álvarez-Sánchez, Rachele Brivio, Rita Ferreira De Souza, Nathalie Troubat, Isabela Sattamini, Emily Mbelenga, Yurika Ueda, Sitalitha Masangwi, David Haytowitz, and Luigi Castaldi (formerly of FAO).

Finally, the authors would like to thank Louise Ander, Lucia Segovia De La Revilla and Thomas Codd from the University of Nottingham for their contribution on food composition.

6. **REFERENCES**

- Charrondiere, U.R., Stadlmayr, B., Grande, F., Vincent, A., Oseredczuk, M., Sivakumaran, S., Puwastien, P., Judprasong, K., Haytowitz, D., Gnagnarella, P. 2023. “FAO/INFOODS Evaluation framework to assess the quality of published food composition tables and databases - User guide”. Rome, FAO. <https://doi.org/10.4060/cc5371en>
- Development Initiatives. 2018. “2018 Global Nutrition Report: Shining a Light to Spur Action on Nutrition.” Bristol, UK.
- FAO. “FAOSTAT Food and agriculture data”. 2023a. Available at: <https://www.fao.org/faostat/en/#home>
- FAO. “FAOSTAT - Supply Utilization Account”. 2023b. Available at: <http://www.fao.org/faostat/en/#data/SCL>.
- FAO. “Minimum dietary diversity for women. An updated guide for measurement: from collection to action”. 2021. Rome. doi: <https://doi.org/10.4060/cb3434en>.
- FAO/INFOODS, “Tagnames for Food Components,” 2017. <http://www.fao.org/infoods/infoods/standards-guidelines/food-component-identifiers-tagnames/en/> (accessed Aug. 27, 2021).
- FAO/INFOODS, “Guidelines for Food Matching: Version 1.2.,” 2012. [Online]. Available: <http://www.fao.org/docrep/017/ap805e/ap805e.pdf>
- FAO and WHO. Global Individual Food consumption data Tool (GIFT). 2023. URL: <https://www.fao.org/gift-individual-food-consumption/data/en>
- FAO and WHO, “FAO/WHO GIFT - Food groups and sub-groups,” 2021. <http://www.fao.org/gift-individual-food-consumption/methodology/food-groups-and-sub-groups/en/> (accessed Oct. 08, 2021).
- Food Systems Dashboard. 2023. Available at: <http://www.foodsystemsdashboard.org/>.
- GBD 2017 Diet Collaborators. 2019. “Health Effects of Dietary Risks in 195 Countries, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017.” *The Lancet* 393 (10184): 1958–72. [https://doi.org/10.1016/S0140-6736\(19\)30041-8](https://doi.org/10.1016/S0140-6736(19)30041-8).
- Global Panel on Agriculture and Food Systems for Nutrition. 2016. “Food Systems and Diets: Facing the Challenges of the 21st Century.” London, UK. <https://www.glopan.org/wp-content/uploads/2019/06/ForesightReport.pdf>.
- High Level Panel of Experts. 2022. Data collection and analysis tools for food security and nutrition: towards enhancing effective, inclusive, evidence-informed, decision making. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
- Micha, R., Coates J., Leclercq C., Charrondiere U.R., and Mozaffarian, D.. 2018. “Global Dietary Surveillance: Data Gaps and Challenges.” *Food and Nutrition Bulletin* 39 (2): 175–205. <https://doi.org/10.1177/0379572117752986>.
- Russell, J., Lechner, A., Hanich, Q., Delisle, A., Campbell, B., & Charlton, K. 2018. “Assessing food security using household consumption expenditure surveys (HCES): A scoping literature review”. *Public Health Nutrition*, 21(12), 2200-2210. doi:10.1017/S136898001800068X.
- World Bank. 2023. “Microdata Library / Living Standards Measurement Study (LSMS)”. <https://microdata.worldbank.org/index.php/catalog/lsm> (accessed Aug. 27, 2021).