

INDICATORS OF FOOD SECURITY

OUTLINE

- Importance of Food Insecurity Indicators
- Measures of Food Insecurity
- Valuable Data Sources

LEARNING OUTCOMES

- Apply food security indicators to real-world analytical purposes.

THE IMPORTANCE OF FOOD INSECURITY INDICATORS



Food security indicators are important for research purposes.



Food security indicators are important for public policy programming and simulation.



Food security indicators are important for humanitarian assistance decision-making and advocacy.



Food security indicators are a powerful tool to contribute to a more informed public debate.

MEASURES OF FOOD INSECURITY

Quantitative Measures

Food availability indicators

Food access indicators

Food utilization indicators

Food stability indicators

Qualitative Measures

IPC Classification

IFPRI's GHI

Food Insecurity Experience Scale

Global Food Security Index

VALUABLE DATA SOURCES



FAO DATA



WDI DATA



IHME DATA

FOOD AVAILABILITY INDICATORS



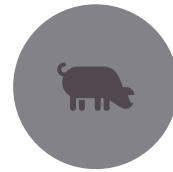
AVERAGE VALUE OF
FOOD PRODUCTION



SHARE OF DIETARY
ENERGY SUPPLY
DERIVED FROM
CEREALS, ROOTS
AND TUBERS



AVERAGE PROTEIN
SUPPLY



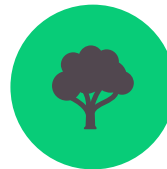
AVERAGE SUPPLY
OF PROTEIN OF
ANIMAL ORIGIN



AGRICULTURAL
PRODUCTION



FRESHWATER



LAND USE

FOOD ACCESS INDICATORS

Physical Access

Percent of Paved Roads over Total Roads

Road-Density

Rail-lines Density

Economic Access

Domestic Food Price Level Index

Real Income

Access Outcome

Prevalence of Undernourishment

Share of Food Expenditure of the Poor

Depth of Food Deficit

Prevalence of Food Inadequacy

FOOD UTILIZATION INDICATORS



Facilitators

WASH indicators



Consequences

Malnutrition

WASH



Water

Access to improved water sources



Sanitation

Access to improved sanitation facilities



Hygiene

Access to improved water sources
Access to improved sanitation facilities

MALNUTRITION



Undernutrition

Acute: Wasting
Chronic: Stunting
Acute and chronic: Underweight



Micronutrient-related malnutrition

Vitamin and Micronutrient Deficiencies
Vitamin and Micronutrient Excess



Overweight, obesity and diet-related noncommunicable diseases

FOOD STABILITY INDICATORS

Stability

- Refers to continuous adequate access to food, which requires all three prior pillars to be guaranteed: sufficient availability, continuous access, and optimal utilization.
- Hence, stability can only be measured over time.

SUMMARY

- In this module we learned about
 - quantitative and qualitative measures of food insecurity
 - where to find food insecurity relevant data
 - food availability, access, utilization, and stability indicators
- In this section's complementary materials you will find factsheets on:
 - Undernutrition
 - Micronutrients – Vitamins
 - Micronutrients – Minerals
 - Nutrition Deficiency Diseases
- Which will further illustrate the importance of different food availability indicators.

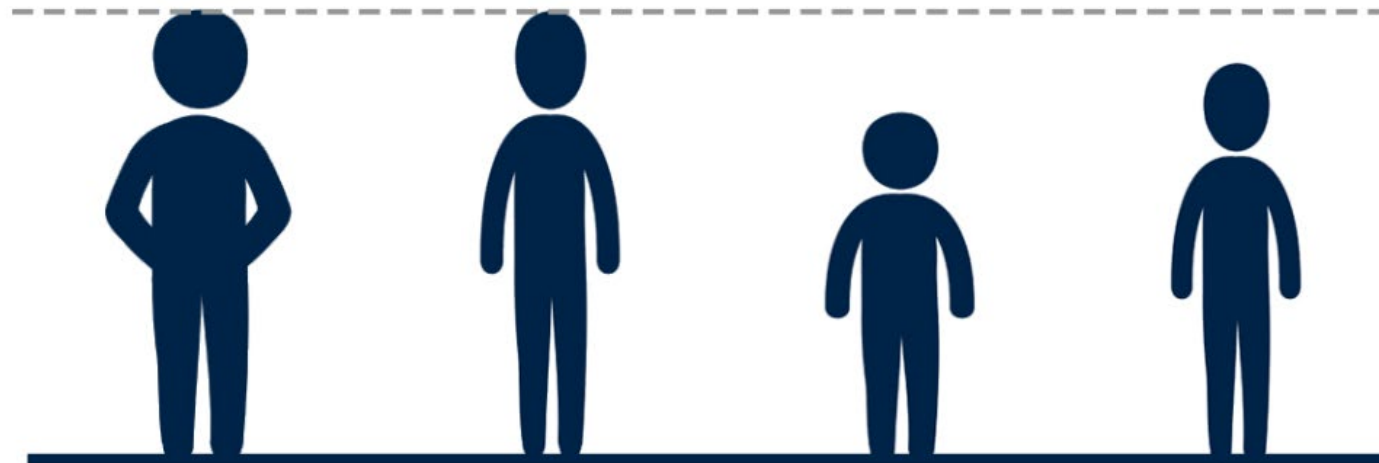
COMPLEMENTARY MATERIAL

- [Development Initiatives Ltd \(2018\). Global Nutrition Report 2018 \[online\]. Retrieved: 10/28/2018](#)
- [WHO \(2018\). Malnutrition \[online\]. Retrieved: 10/28/2019](#)
- [WHO \(2018\). Core questions and indicators for monitoring WASH in health care facilities in the Sustainable Development Goals \[online\]. Retrieved: 10/28/2019](#)
- [FAOstat](#)
- [World Development Indicator Database](#)
- [Institute for Health Metrics and Evaluation](#)

FACTSHEET UNDERNUTRITION

Different types of undernutrition

Normal height for age



NORMAL

WASTING

*Low weight
for height*

STUNTING

*Low height
for age*

UNDERWEIGHT

*Low weight
for age*

Source: WorldVision (2015)

FACTSHEET

MICRONUTRIENTS - VITAMINS

- **Vitamin A**
 - Function: Involved in immune function, vision, cell growth and cell communication.
 - Symptoms: Night blindness and xerophthalmia
- **Vitamin B6**
 - Function: Involved in greater than 100 enzyme reactions in the body and involved in protein metabolism.
 - Symptoms: Microcytic anemia, scaling of the lips and cracks in the corners of the mouth, swollen tongue, depression, and confusion
- **Folate**
 - Function: Involved in the synthesis of RNA and DNA and is required for cell division and the prevention of Neural Tube Defects.
 - Symptoms: Megaloblastic anemia
- **Vitamin B12**
 - Function: Involved in red blood cell formation, neurological function, and DNA synthesis.
 - Symptoms: Megaloblastic anemia, fatigue, weakness, constipation, loss of appetite, and weight loss
- **Vitamin C**
 - Function: Involved in the formation of collagen, certain neurotransmitters, and protein synthesis.
 - Symptoms: Development of scurvy which would include fatigue, inflammation of the gums, and weakened connective tissue
- **Vitamin D**
 - Function: Promotes calcium absorption and proper bone formation, involved in cell growth, immune function, and reduces inflammation.
 - Symptoms: Development of rickets in children or osteomalacia in adults, and fatigue

FACTSHEET

MICRONUTRIENTS - MINERALS

- **Calcium**
 - Function: Involved in muscle function, nerve transmission, and proper bone formation.
 - Symptoms: Development of osteoporosis
- **Iodine**
 - Function: A component of thyroid hormones that regulate protein synthesis, metabolism, and enzyme activity.
 - Symptoms: Stunted growth and neurodevelopmental deficits
- **Iron**
 - Function: A component of hemoglobin and therefore important in the transfer of oxygen from the lungs to organs and involved in the synthesis of hormones as well as normal growth and development.
 - Symptoms: Microcytic, hypochromic anemia; impaired cognitive function, poor body temperature regulation, depressed immune function, and spoon like shape of nails
- **Magnesium**
 - Function: Involved in more than 300 enzyme reactions, protein synthesis, muscle function, nerve function, blood sugar control, and blood pressure control.
 - Symptoms: Loss of appetite, fatigue, weakness, nausea, vomiting, numbness, tingling, muscle cramps, seizures, personality changes, and abnormal heart rhythms
- **Zinc**
 - Function: Involved in cell metabolism, enzyme activity, immune function, protein synthesis, wound healing, DNA synthesis, and cell division.
 - Symptoms: Stunted growth, depressed immune function, hair loss, eye and skin lesions, delayed wound healing, and taste alterations

FACTSHEET

NUTRITION DEFICIENCY DISEASES

- **Xerophthalmia**
 - Key nutrient: Vitamin A
 - Symptoms: blindness from chronic eye infections, poor growth, dryness and keratinization of epithelial tissues
- **Rickets**
 - Key nutrient: Vitamin D
 - Symptoms: weakened bones, bowed legs, other bone deformities
- **Beriberi**
 - Key nutrient: Vitamin B₁ (Thiamin)
 - Symptoms: nerve degeneration, altered muscle coordination, cardiovascular problems
- **Pellagra**
 - Key nutrient: Vitamin B₃ (Niacin)
 - Symptoms: diarrhea, skin inflammation, dementia
- **Scurvy**
 - Key nutrient: Vitamin C
 - Symptoms: delayed wound healing, internal bleeding, abnormal formation of bones and teeth
- **Anemia**
 - Key nutrient: Iron
 - Symptoms: decreased work output, reduced growth, increased health risk in pregnancy
- **Goiter**
 - Key nutrient: Iodine
 - Symptoms: enlarged thyroid gland, poor growth in infancy and childhood, possible mental retardation, cretinism
- **Kwashiorkor**
 - Key nutrient: Protein
 - Symptoms: change in skin and hair color (to a rust color) and texture, fatigue, diarrhea, loss of muscle mass, failure to grow or gain weight, edema (swelling) of the ankles, feet, and belly, damaged immune system, which can lead to more frequent and severe infections, irritability, flaky rash, shock
- **Marasmus**
 - Key nutrient: Protein
 - Symptoms: chronic diarrhea, respiratory infections, intellectual disability, stunted growth

SELF- ASSESSMENT

- True or False Questions
- Multiple Choice Questions
- Cloze Questions



EXERCISE

- The International Food Policy Research Institute publishes a Global Hunger Index (GHI) every year.
- The GHI can be found [here](#).
- Familiarize yourself with the GHI and write a short paragraph in which you discuss the extent to which it truly measures hunger.

EXERCISE

- In the previous lecture “What is Food Security,” you explored four countries’ food insecurity problems from a qualitative perspective.
- Please collect now some appropriate food insecurity indicators to quantitatively illustrate the severity of the food insecurity problems that you highlighted in the previous exercise.
- Try to relate your indicators to ideal, recommended, or average values.

SOURCES

Development Initiatives Ltd (2018). Global Nutrition Report 2018 [online]. Link: <https://globalnutritionreport.org/reports/global-nutrition-report-2018/>. Retrieved: 10/28/2018

National Institute of Health (na). Dietary Supplement Fact Sheets [online]. Link: <https://ods.od.nih.gov/factsheets/list-all/>. Retrieved: 12/2/2019

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