

Minimum Dietary Diversity for Women of Reproductive Age: Introducing A Guide for Measurement

Mary Arimond April 13th 2016

Presenting on behalf of the writing team:

Mary Arimond, University of California, Davis

Terri Ballard, Food and Agriculture Organization

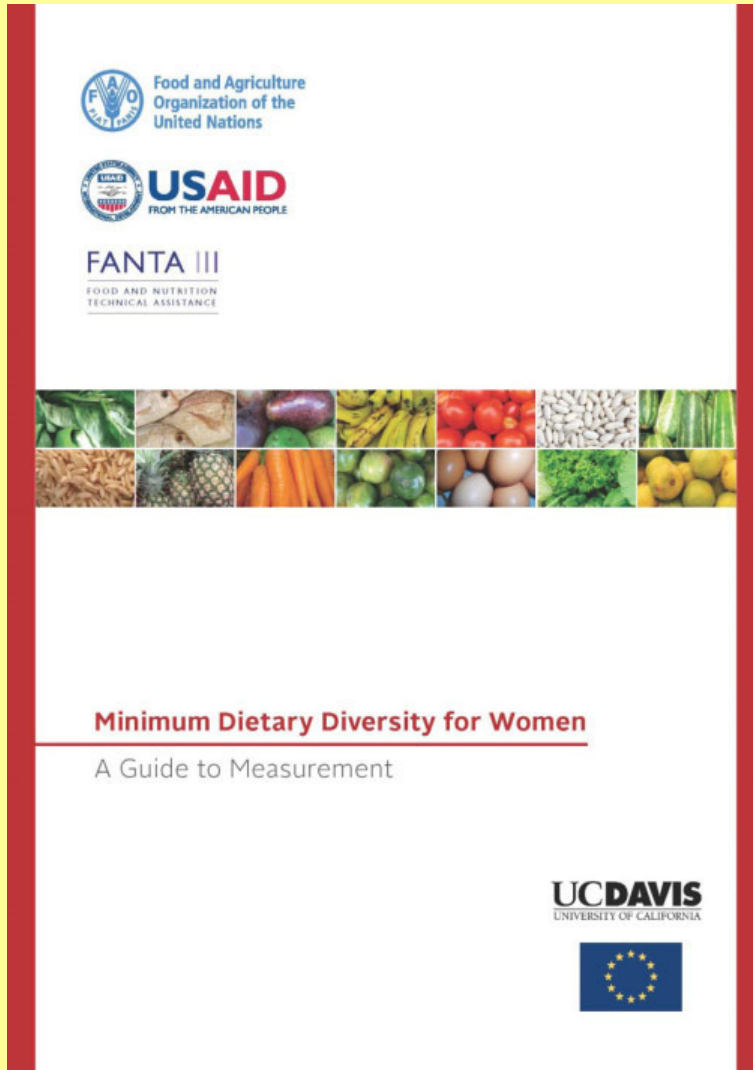
Megan Deitchler, FANTA-III Project

Gina Kennedy, Bioversity International

Yves Martin Prével, IRD Montpellier



New guide available at:



FAO website

<http://www.fao.org/3/a-i5486e.pdf>

FANTA website

<http://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw>

Topics for presentation

- Indicator definition
- Background/rationale
- “Tour” of indicator and new guide – what resources/answers does guide provide?
- Limitations of MDD-W indicator
- Appropriate uses

Minimum Dietary Diversity for Women of Reproductive Age (MDD-W): Indicator definition

- The proportion of women 15-49 years of age who consumed food items from at least five out of ten defined food groups the previous day or night

Grains, white roots/tubers, plantains

Pulses (beans, peas and lentils)

Nuts and seeds

Dairy

Meat, poultry and fish

Eggs

Dark green leafy vegetables

Other vitamin A-rich fruits & vegetables

Other vegetables

Other fruits

Why dietary diversity indicators?

- Strong and rising **demand for simple indicators** to reflect at least some aspects of food intake and/or diet quality
- **“Gold standard” methods** for dietary data collection (repeated weighed records, quantitative 24-hr recalls) entail exceptionally **resource intensive** data collection, processing, analysis
- Efforts underway to streamline quantitative recalls: e.g. INDDEx project <http://inddex.nutrition.tufts.edu/about-us>
- But in the meantime, a critical gap in simple, feasible indicators for **assessment** of diet quality

What are DD indicators?

- **Simple counts of foods or food groups** consumed
 - e.g. “WDDS” – ranging from 0-9
- Some with **thresholds** with results expressed as prevalence
 - e.g.: IYCF MDD, % consuming 4+ groups out of 7
- Food groups **more or less aggregated**
 - E.g.: Meat, poultry, fish as 3 groups vs “flesh foods” as 1 group
 - E.g.: How many different fruit and vegetable groups?
- **Recall period** – often one day, sometimes one week or longer

What do DD indicators – measured at individual level – reflect?

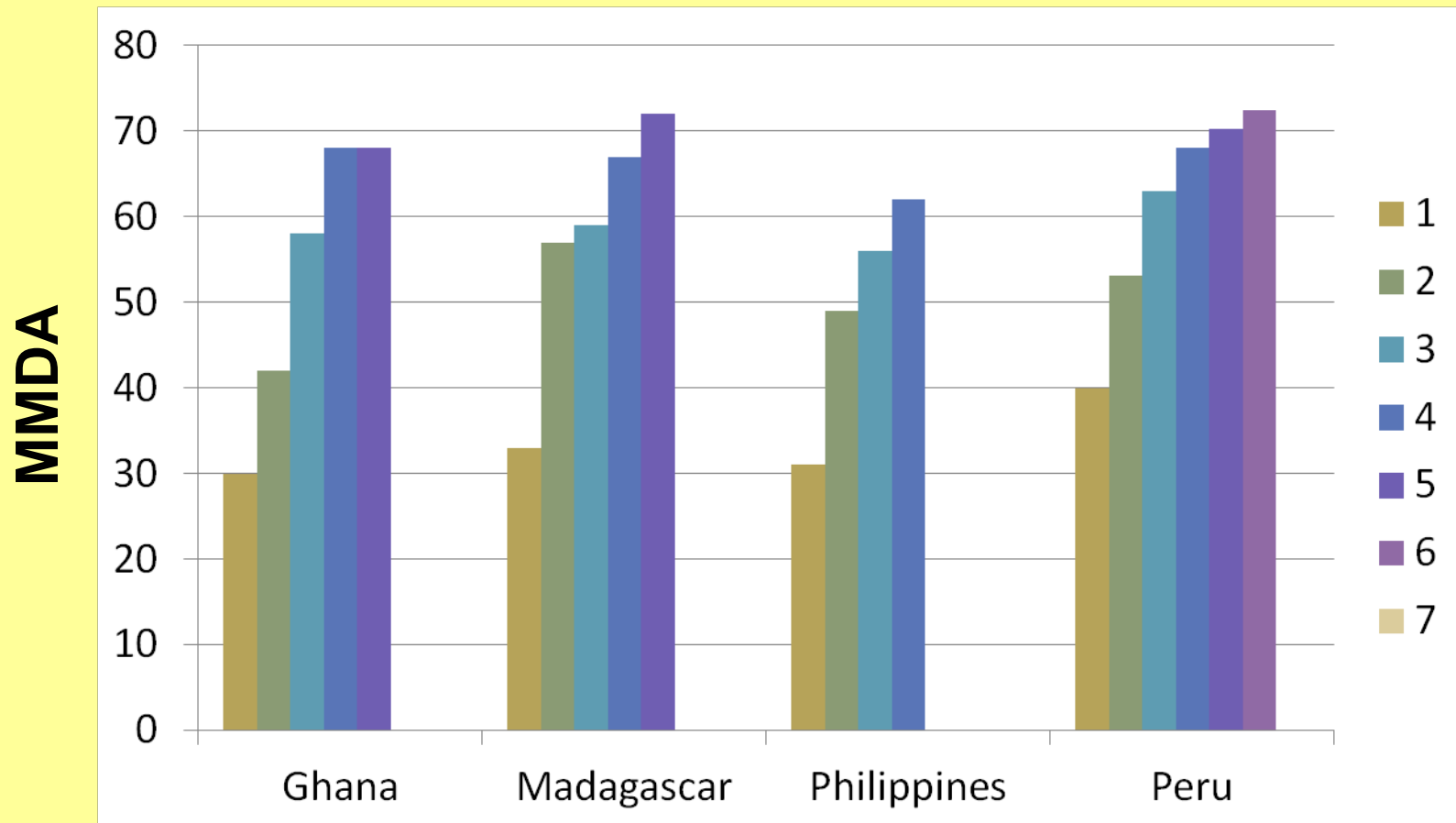
- **One important dimension of diet quality**; food group diversity is embedded in/advocated by all national dietary guidelines, healthy diet patterns, and in WHO advice* on healthy diets
- Consistently **associated with micronutrient density** (infants) and **micronutrient adequacy** (women) of diets, including in multi-site studies (following slides)
- Has also been associated with infant length or growth in some studies, but not in others – should be considered as a **proxy for one aspect of diet quality, not for other health or nutrition outcomes**

*<http://www.who.int/mediacentre/factsheets/fs394/en/>

Dietary diversity and nutrient density

(Working Group on IYC Feeding Indicators 2006)

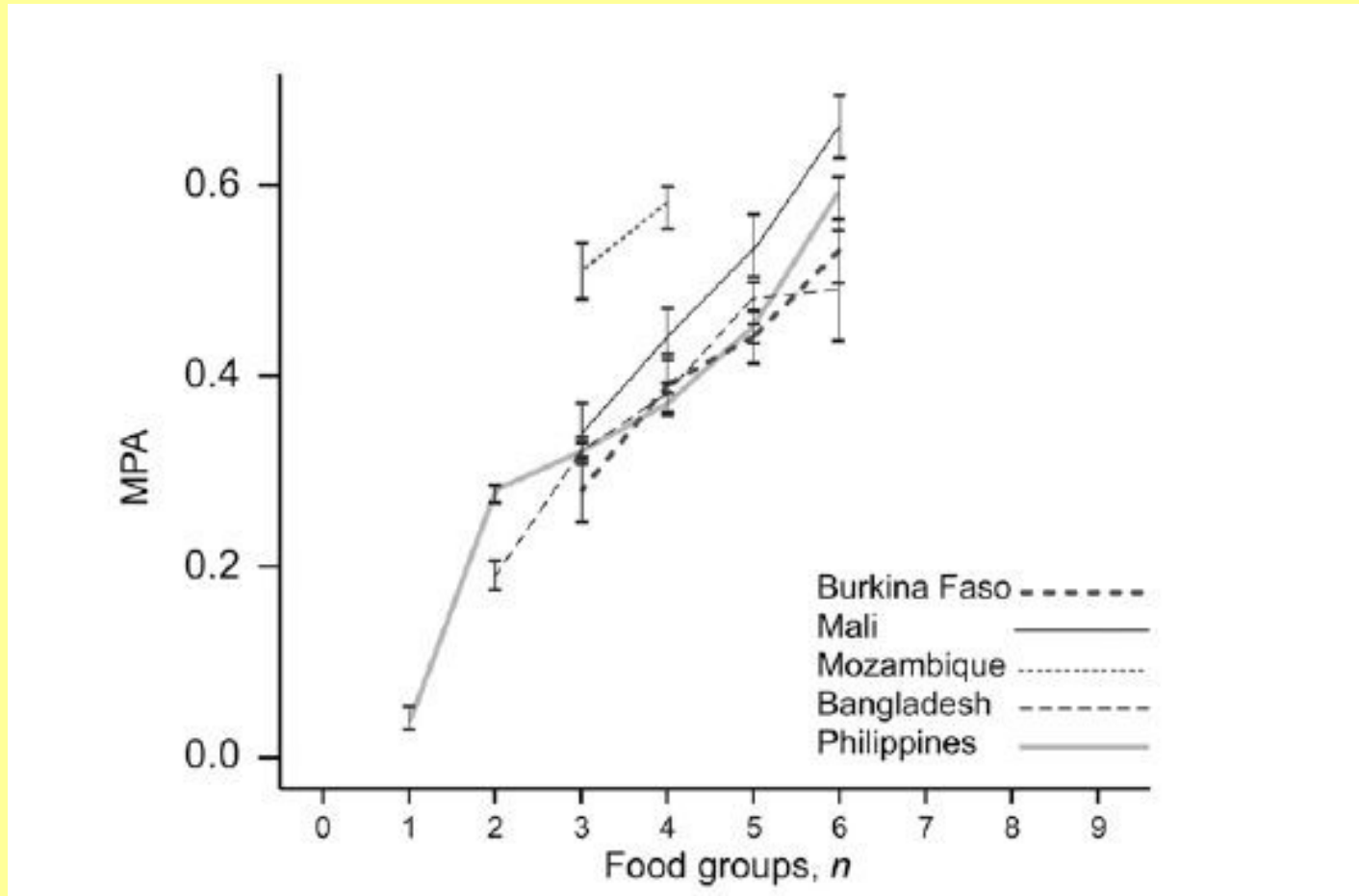
Breastfed infants 6-8 mo, MMDA by # food groups yesterday



“MMDA” is a measure of the adequacy of nutrient density, relative to needs, and averaged across 9 “problem nutrients”

Dietary diversity and micronutrient adequacy

(Arimond et al., Women's Dietary Diversity Project, J Nutr. 2010)



“MPA” is probability of adequacy averaged across 11 micronutrients

What do DD indicators NOT reflect?

- **Quantities** of nutrient-rich foods consumed
 - Possible to meet “minimum diversity” cut-off but still lack micronutrients, especially if quantities of high-quality foods are small
- **Other dimensions** of diet quality such as:
 - Macronutrient balance (carbohydrate, protein, fat)
 - Moderation (saturated fat, salt, free sugars)
 - Carbohydrate quality, quality of fats or protein
- These other dimensions of diet quality increasingly important as **non-communicable diseases are an increasing burden globally**, including in poor countries

WDDS to MDD-W

- **Sorry for acronyms**
- **Women's Dietary Diversity Project – 2 phases**
- **WDDP-I:** Analysis of data from 5 sites confirmed consistent relationship between simple DD scores (including 9-group WDDS) and micronutrient adequacy, but no dichotomous indicator proposed
- **WDDP-II:** Response to need for an indicator that can be expressed as a prevalence. Analyzed additional data sets; convened consensus meeting resulting in indicator with threshold (MDD-W); developed Guide

Minimum Dietary Diversity for Women of Reproductive Age (MDD-W): Indicator definition

- The proportion of women 15-49 years of age who consumed food items from at least five out of ten defined food groups the previous day or night

Grains, white roots/tubers, plantains

Pulses (beans, peas and lentils)

Nuts and seeds

Dairy

Meat, poultry and fish

Eggs

Dark green leafy vegetables

Other vitamin A-rich fruits & vegetables

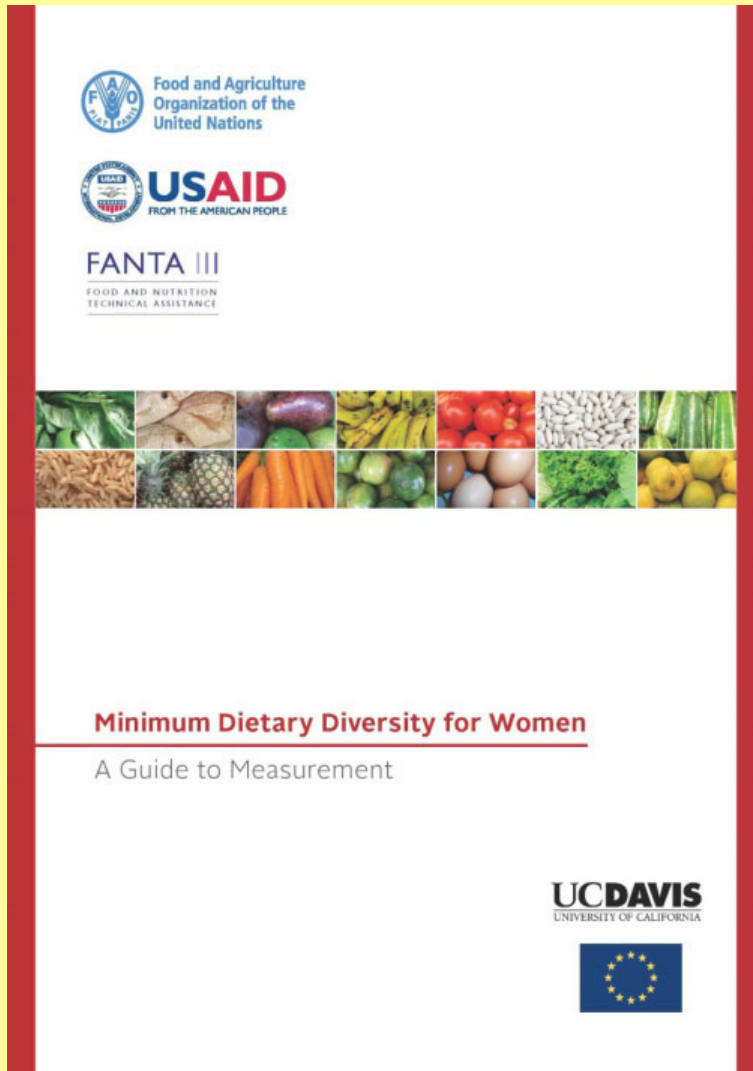
Other vegetables

Other fruits

Interpretation of MDD-W

- Groups of WRA where a higher proportion consume ≥ 5 of the 10 food groups are likely to have higher micronutrient adequacy
- Higher prevalence of MDD-W is a proxy for better micronutrient adequacy among WRA in the population
- Groups who consume ≥ 5 of the 10 food groups are also highly likely to consume (% across 9 WDDP-II data sets):
 - At least one animal-source food (84%), and
 - Either pulses or nuts/seeds (84%), and
 - Two or more fruit/vegetable food groups (98%)

What does new guide provide?



- “Quick start” guide (see next)
- Background, definitions
- Detailed descriptions of food groups
- Recommended methods and model questionnaires
- Guidance on adaptation and on enumerator training
- Tabulation and presentation
- Comparison to other DD indicators (next slides)
- Special topics (next slides)
- Accompanied by FAQ – highly recommended for new users

Quick start guide

- Available as a standalone and also at start of document. Provides hyperlinks to sections of interest. Companion to FAQs for fast access to specific topics of interest.

QUICK START

Measuring women's dietary diversity – Quick Start Guide

This Quick Start Guide provides hyperlinks to guidance on specific questions and tasks and also a cautionary list of common errors (see box below).

All users should read the Quick Start Guide for an overview of available guidance and common pitfalls. We encourage users with no prior experience with simple food group diversity indicators to consider reading the full manual. Experienced users may find this page useful for quickly finding answers to specific questions. Please also see the Frequently Asked Questions.

- [Why measure Minimum Dietary Diversity for Women of Reproductive Age \(MDD-W\)?](#)
- [Indicator definition](#)
- [Appropriate uses of the MDD-W indicator](#)
- [Comparison with other food group diversity indicators](#) (see also [Appendix 4](#))
- [How to collect data – introducing the guided open recall](#)
- [Survey sampling and design issues for food group recalls](#)

Comparisons to other DD indicators

- Compared to WDDS, MDD-W:
 - Has slightly different food groupings
 - Can be reported as prevalence – particularly useful in advocacy and with non-nutrition audiences

Table 1. Simple food group diversity indicators currently in use or advocated for use at population level

	HDDS^a	IYCF MDD^b	WDDS^c	MDD-W^d
Population sampled/unit of analysis	Households	Infants and young children aged 6–23 months	Women aged 15–49 years	Women aged 15–49 years
Validated against	Kilocalorie availability as assessed in household-level consumption surveys	Micronutrient density compared with desirable density for complementary foods, assessed by 24-hour recall or weighed food records	Micronutrient adequacy assessed by multiple 24-hour recalls	Micronutrient adequacy assessed by multiple 24-hour recalls
Meaning	Proxy for household-level access to kilocalories (dietary energy),	Proxy for the adequacy of the micronutrient density of infant and young child	Proxy for the probability of micronutrient adequacy of women's diets	Proxy for the probability of micronutrient adequacy of women's diets

Open recall vs. list-based methods

- Guide provides description and comparison of advantages and disadvantages
- Open recalls – no list read to respondent; enumerator guides respondent through qualitative (i.e. no amounts) recall of all foods/beverages consumed yesterday/night and ticks in appropriate rows on questionnaire
 - Burden on enumerator to put things in correct group/row
- List-based – list of food groups, with examples, read to respondent
 - Burden on respondent to mentally “take apart” mixed dishes, “classify” food consumed as similar to those mentioned, and to move backwards and forwards in time as groups are mentioned
- Different methods will produce different results

How much is enough to count?

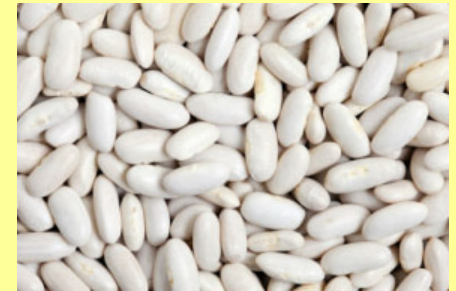
- Ideally, WRA would consume adequate amounts of nutrient-rich food groups; but with exception of fruits/vegetables (≥ 400 g), no global guidance on adequate amounts AND MDD-W designed for situations where measurement of quantity is not possible
- Relationship between DD indicators and micronutrient adequacy is improved when very small quantities (e.g. < 15 g) are not allowed to count
- Principle underlying decisions in Guide: **When in doubt, err on the side of NOT falsely inflating diversity**
- Operationally, define at time questionnaire is adapted; place foods/ingredients usually used for flavor or otherwise in small quantities in the “Condiments and seasonings” group

Mixed dishes

- Guide provides suggestions for how to handle during adaptation of questionnaire and enumerator training
- Approach to defining main ingredients follows **same principle of erring on side of not inflating diversity**
- Provides long list of **examples of items that should be classified in “Condiments and seasonings” group**; these do not “count” in any of the 10 food groups
- Provides a Box with examples of which ingredients to count in soups, stews, vegetable dishes, etc.

Classifying foods/ingredients into groups

- Section 2 of the Guide provides descriptions of each food group and Appendix 2 provides very detailed lists of example foods for each group
- Example from Appendix 2, **Pulses group**:



Common name (regional common names)	Binomial name OR genus	Family	Edible part of the plant
Adzuki bean	<i>Vigna angularis</i>	Fabaceae	Mature seed
Bambara groundnut (<i>jugo bean</i>)	<i>Vigna subterranea</i>	Fabaceae	Mature seed
Broad bean (<i>fava bean, faba bean, horse bean, field bean, tic bean</i>)	<i>Vicia faba</i>	Fabaceae	Mature seed
Chickpea (<i>chana dal</i>)	<i>Cicer arietinum</i>	Fabaceae	Mature seed
Cluster bean (<i>guar</i>)	<i>Cyamopsis tetragonoloba</i>	Fabaceae	Mature seed
Common bean (<i>black bean, kidney bean, pinto bean, others</i>)	<i>Phaseolus vulgaris</i>	Fabaceae	Mature seed
Coral bean (<i>Cherokee bean</i>)	<i>Erythrina herbacea</i>	Fabaceae	Mature seed
Cowpea (<i>black-eyed pea, catjang, yardlong bean, southern pea, zombi pea</i>)	<i>Vigna unguiculata</i>	Fabaceae	Mature seed

Classification challenges

(“problem foods”)

- Appendix 2 also provides guidance on classification of “problem foods” – problem foods were identified based on feedback from stakeholders who have been operationalizing various food-group diversity indicators

Problem foods	Questionnaire category and comments
Pastries, sweet breads	“Sweets”
Pickles	“Other beverages and foods”
Ready-to-use therapeutic food, ready-to-use supplementary food	These specialised products are sometimes distributed to women of reproductive age, particularly during pregnancy. Classify based on main ingredient. Often this is peanut (so classify with “Nuts and seeds”), but it may be a pulse. It is also advisable to add separate questions to capture coverage of these specialised products, if this is of interest to survey designers.
Samosas and similar savoury fried pastries	“Savoury and fried snacks”
Seaweed	“Other vegetables”. Most species/varieties are not vitamin A-rich, but a few are. If a locally consumed type of seaweed is known to be vitamin A-rich (defined as ≥ 120 RE ^b /100 g, in form as eaten), it can be classified with “Dark green leafy vegetables”.

Low nutrient-density foods

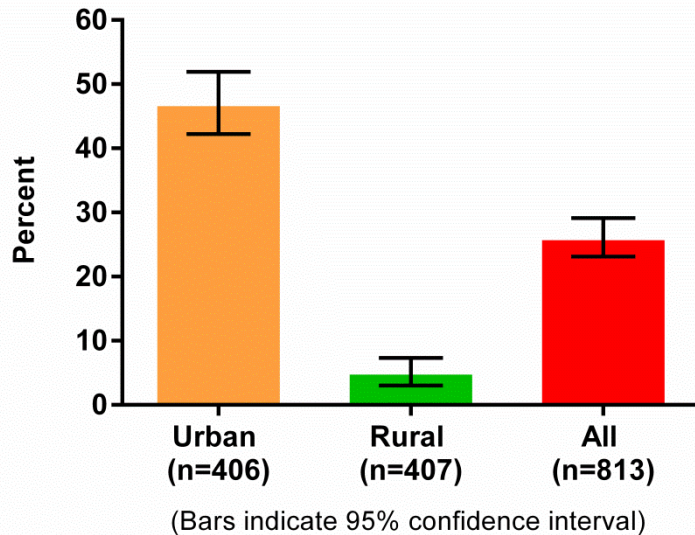
- There are no standard/widely used categorization schemes for low nutrient-density foods
- Rising interest in capturing information on consumption patterns
- Guide defines and describes several optional categories for inclusion: savoury and fried snacks; sweets, sugar-sweetened beverages
- When using open recall method, inclusion of these on questionnaire does not increase time needed for data collection

Seasonality

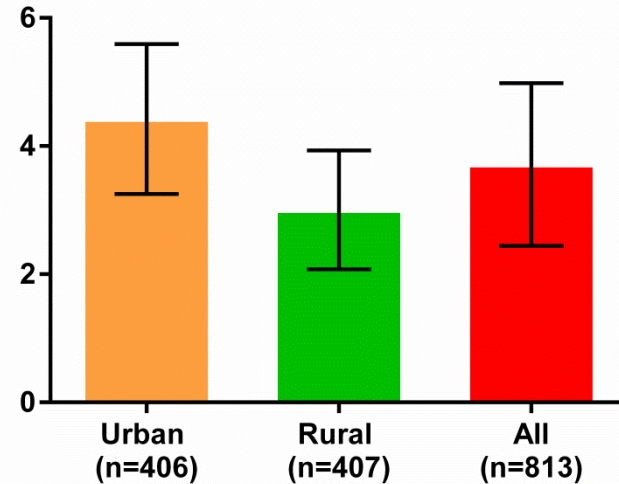
- When diet patterns vary with season, may affect the proportion consuming ≥ 5 food groups
- Diversity can increase during lean/hunger seasons e.g. if foraged foods consumed; may add diversity, even micronutrients, but in the context of hunger - underscores that DD cannot be viewed in isolation
- Avoid comparing results from different seasons, if seasonality could affect diversity
- When data and capacity allow, may be possible to adjust for seasonality using survey date and GPS data
- **Note seasonality is an issue for many food security, health and nutrition indicators – not just DD**

Presenting results – example 1

Percent achieving Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) (≥ 5 food groups yesterday)



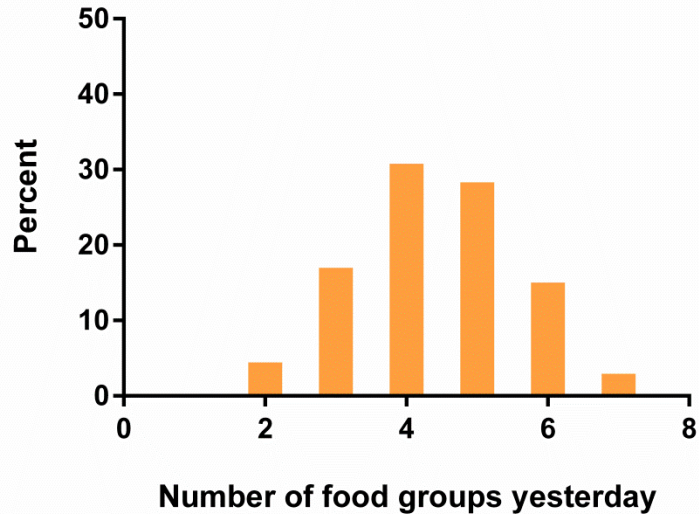
Mean (SD) number of food groups yesterday



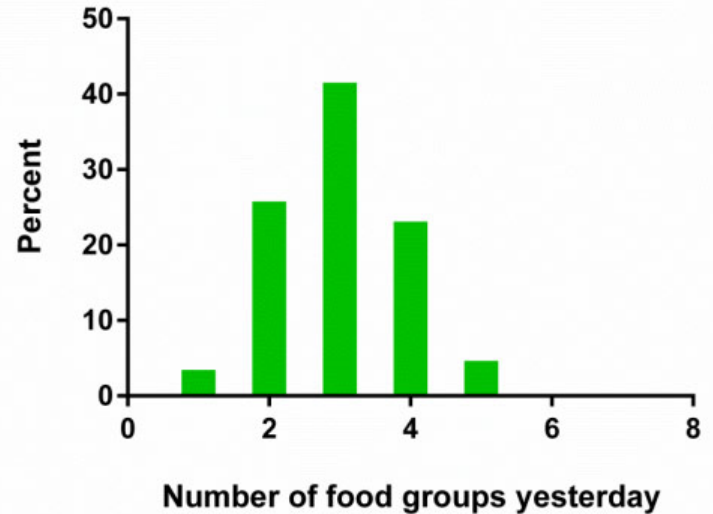
Presenting results – example 2

Food group diversity scores for yesterday, out of 10 groups

Urban (n=406)

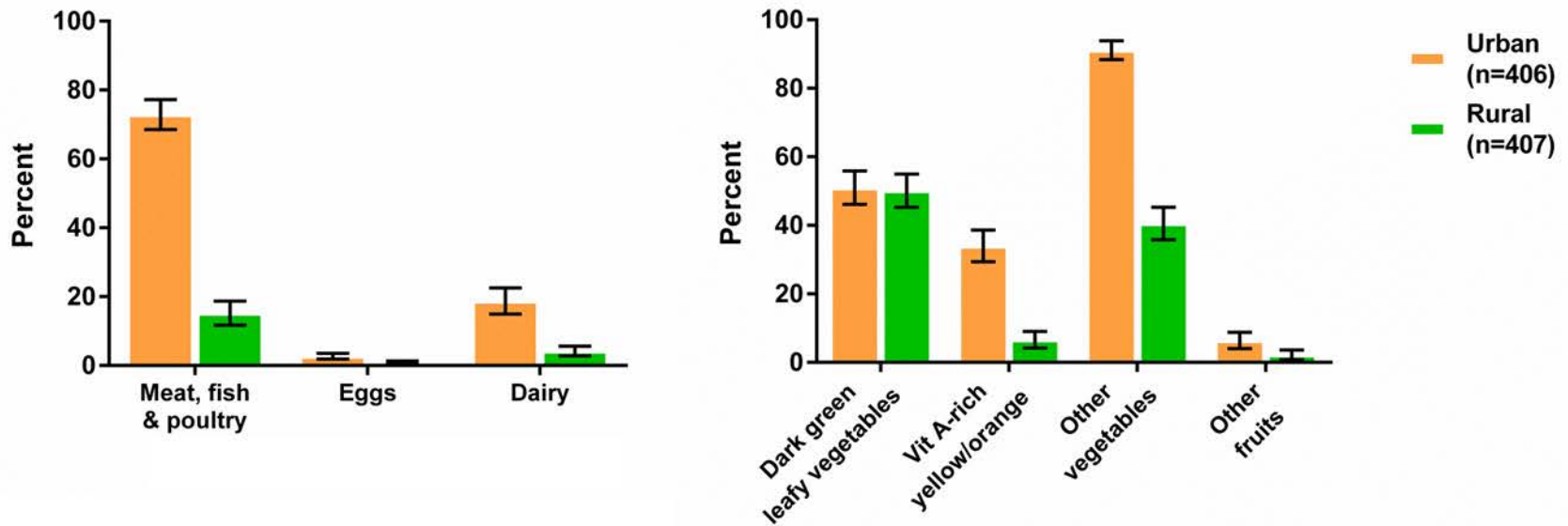


Rural (n=407)



Presenting results – example 3

Percent consuming selected nutrient-rich food groups yesterday



(bars indicate 95% confidence interval)

Limitations of diversity indicators

- Although survey respondents are individuals, **indicator can only be used/interpreted at level of population/group**; normal day-to-day variability in intakes (as well as measurement error) means NOT adequate to characterize individuals
- **Designed as a yardstick for national/sub-national assessment; relatively low sensitivity and specificity**
- **Do not use for screening/targeting individuals**
- **Use with caution for geographic targeting**, considering seasonality, and use only as part of a suite of indicators
- **Consider sample size requirements**, especially when using for comparisons or in pre-post designs and/or M & E systems (dichotomous indicators often require large samples)

Limitations, continued

- Useful in M & E for nutrition-sensitive programs only when the program/project objectives and impact pathways include impact on food group diversity. DD may not increase e.g. as a result of.....
 - Agricultural projects that aim to **increase productivity and/or incomes only**, but do not have either a gender focus or behavior-change component related to diets
 - Projects that aim to increase production and consumption of **food items or food groups already widely consumed**. Even if successful in increasing quantity of intake, will not be reflected in MDD-W – these projects can have positive impacts but need other metrics
 - **BCC/SBCC-only interventions**, when HH income/resources are insufficient to purchase or acquire nutrient-rich foods (or, when HH are producing, and strong pressures to sell are not overcome)

Limitations, continued

- Consumption of ≥ 5 food groups **does not guarantee micronutrient adequacy**, especially when quantities are small.
- **Should NOT be used as basis for dietary guidelines**; processes for developing guidelines are well-documented by WHO, FAO
- **Should NOT be used as a basis for message development** in SBCC/BCC – lots of toolkits available for developing grounded messages
- **NO SINGLE INDICATOR sufficient for everything**
 - Other indicators urgently needed for assessment and tracking of change/progress related to the nutrition transition.
 - Other indicators also needed to reflect coverage and impact of fortification, biofortification, supplementation, and other program elements

Appropriate uses of MDD-W

- MDD-W can be used as a proxy to describe one important dimension of women's diet quality in national and sub-national assessments
- Targets can be set and prevalence of MDD-W can be compared to previous assessments, so long as survey methods are consistent and timing accounts for seasonality
- In the context of programs, MDD-W may be useful when the program design, activities, and impact pathway indicate a potential to increase food group diversity

Acknowledgments

Reviewers

Elodie Becquey, Marie-Claude Dop, Leslie Koo, Claudia Lazarte Pardo, Warren Lee, Mary Lung'aho, Judiann McNulty, Theodora Mouratidou, Mourad Moursi, and Anne Swindale

Meeting participants

Experts at two meetings convened by FAO and FANTA in July 2014 and January 2015 (*see FANTA website for meeting summaries and participants*)

WDDP collaboration

Five-member writing team plus: Pauline Allemand, Elodie Becquey, Alicia Carriquiry, Melissa Daniels, Marie-Claude Dop, Elaine Ferguson, Nadia Fanou-Fogny, Maria Joseph-King, Warren Lee, Mourad Moursi, Marie Ruel, Liv Elin Torheim, and Doris Wiesmann

Funders

Development of the Guide was funded by USAID through the Food and Nutrition Technical Assistance III Project (FANTA), the Food and Agriculture Organization, and the World Food Center at the University of California, Davis.