

METHODOLOGY OVERVIEW

ADAPTATION AND ADDITION TO

WDDP-II

Reaching Consensus on a Global Dietary Diversity Indicator for Women,
Washington, DC, July 15–16, 2014

Pauline Allemand

July 15, 2014



Outline

- ❖ EAR choices
- ❖ Goldberg exclusions
- ❖ Contributions of food groups to MPA
- ❖ Comparison of prevalence rates given by various MPA and FGI cutoffs
- ❖ Mean MPA and percentage of women having consumed various food groups of interest at-or-above and below FGI cutoffs

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EAR Choices

	Females 15-18Y		Females 19-49y		Pregnant women		Lactating women	
	EAR	SD	EAR	SD	EAR	SD	EAR	SD
Vitamin A (RE/d)	365	73	270	54	370	74	450	90
Vitamin C (mg/d)	33	3.3	38	3.8	46	4.6	58	5.8
Thiamin (mg/d)	0.9	0.09	0.9	0.09	1.2	0.12	1.2	0.12
Riboflavin (mg/d)	0.8	0.08	0.9	0.09	1.2	0.12	1.3	0.13
Niacin (mg/d)	12	1.8	11	1.6	14	2.1	13	2.0
Vitamin B6 (mg/d)	1.0	0.10	1.1	0.11	1.6	0.16	1.7	0.17
Folate (µg/d)	330	33	320	32	520	52	450	45
Vitamin B12 (µg/d)	2.0	0.20	2.0	0.20	2.2	0.22	2.4	0.24
Calcium (mg/d)	1100	100	800	100	800	100	800	100
Iron (mg/d)	IOM table adapt.	IOM table adapt.	IOM table adapt.	IOM table adapt.	10%: 24.9 5%: 49.9	2.34 4.69	10%: 11.7 5%: 23.40	3.51 7.02
Zinc (mg/d)	34%: 7 25%: 9	0.88 1.13	34%: 6 25%: 7	0.75 0.88	34%: 8 25%: 10	1.00 1.25	34%: 7 25%: 8	0.88 1.00

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EAR Choices

- Calcium

- ✓ WDDP-I: Foote method because no EAR (*Foote et al., 2004*)

- ✓ WDDP-II: EAR and RDA from IOM (*IOM, 2011*)

- $RDA = EAR + 2SD \leftrightarrow CV = (RDA - EAR) / 2EAR$

IOM, 2011 (whatever the physiological status)	EAR (mg/d)	RDA (mg/d) <i>RDA = EAR + 2SD</i>	CV (%) <i>CV = SD / EAR</i>
14-18y	1100	1300	9.1
19-50y	800	1000	12.5

EAR Choices

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EAR Choices

- Iron

- ✓ Requirement distribution strongly skewed

- ✓ IOM provides:

For 18%
absorption
level !

- tables to evaluate PA of NPNL

- CV for pregnant (9.4%) and lactating (30%) women + EAR

→ Adapted for 5% and 10% bioavailability

EAR Choices

- Adapt IOM iron values for pregnant women:

- ✓ WHO/FAO, 2004

- Increase of 50% in the 2nd trimester
 - Increase up to 4 times the 1st trimester value

- ✓ IOM, 2000

- 18% in the 1st trimester
 - 25% in the 2nd and 3rd trimesters

WDDP-I

EAR back-calculated for a 23% absorption level – i.e. a weighted average of the three trimesters of pregnancy.

1 st trimester bioavailability	2 nd trimester factor	2 nd trimester bioavailability	3 rd trimester factor	3 rd trimester bioavailability	Mean bioavailability
5%	1.5	7.5%	2.5	12.5%	10.0%
10%	1.5	15.0%	2.5	25.0%	20.0%

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Goldberg exclusions

- Goldberg method applied to all datasets
 - ✓ Using the same cutoffs
 - Under-reporter if $BMR < 0.9$
 - Over-reporter if $BMR > 3.0$
 - ✓ With the exception of Uganda 2
 - ✓ Using an alternative method when needed

Goldberg exclusions

- Alternative method for missing weights
 - ✓ What should be the weight to identify the woman as
 - under-reporter?
 - over-reporter?
 - ✓
$$\text{BMR factor} = \text{Energy} / \underbrace{(X + Y * \text{weight})}_{\text{BMR}}$$

$$\Leftrightarrow \text{weight} = (\text{Energy} - \text{BMR factor} * X) / (\text{BMR factor} * Y)$$
 - ✓ A weight is deemed to be acceptable if it is within the range of known weight values of the dataset

Goldberg exclusions

- Example: Uganda, rural (Ug1)

Weight				
		$\text{weight} = (\text{Energy} - \text{BMR factor} * X) / (\text{BMR factor} * Y)$ $= (2265 - 0.9 * 486.6) / (0.9 * 14.818)$ $= 137 \text{ kg}$		
Age [18 – 30]				e. 36 kg – 108 kg)
Age [18 – 30]	BMR	weight	24	24
X =		486.6	486.6	486.6
Y =	14.818	14.818	14.818	14.818
Consuming (kcal)	2265	2265	2265	2265
BMR factor	0.3	0.9	3.0	4.0
	Under-reporter	Lower limit	Upper limit	Over-reporter
Back-calculated weight	477	137	18	5

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Contribution of food groups to MPA

- Objective 1
 - ✓ Highlighting food sub-groups with a strong contribution to MPA, across all sites, to identify alternate food grouping that maximize the odds of a good correlation, at the individual level, between FGI and MPA
- Method 1
 - ✓ Investigation of the contribution of each 21 FG to individual PA and MPA, in each dataset and for each micronutrient

Contribution of food groups to MPA

- Objective 2

- ✓ From the results of contribution, gauge the potential for improvement of FGI score and relationship between FGI and MPA

- Method 2

- ✓ Suggestion of several possible disaggregations

All starchy staples	Grains & grains products All other starchy staples
All legumes & nuts	Cooked dry beans & peas (inc. soy and soy products) Nuts & seeds
Flesh foods	Meat Fish
Other fruits & vegetables	Other fruits Other vegetables

- ✓ % and mean MPA of women having consumed either one or the other, both, or none of the sub-groups

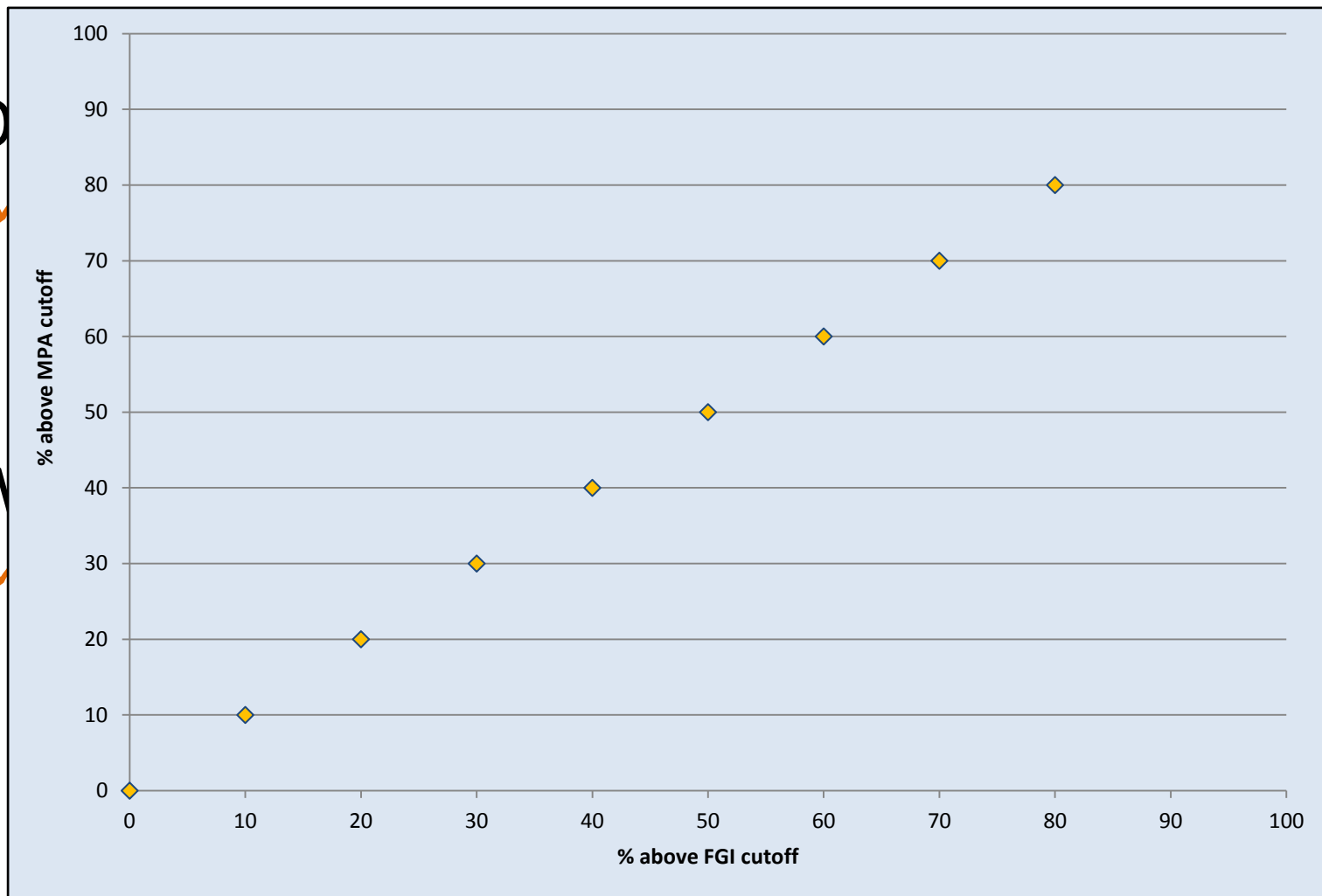
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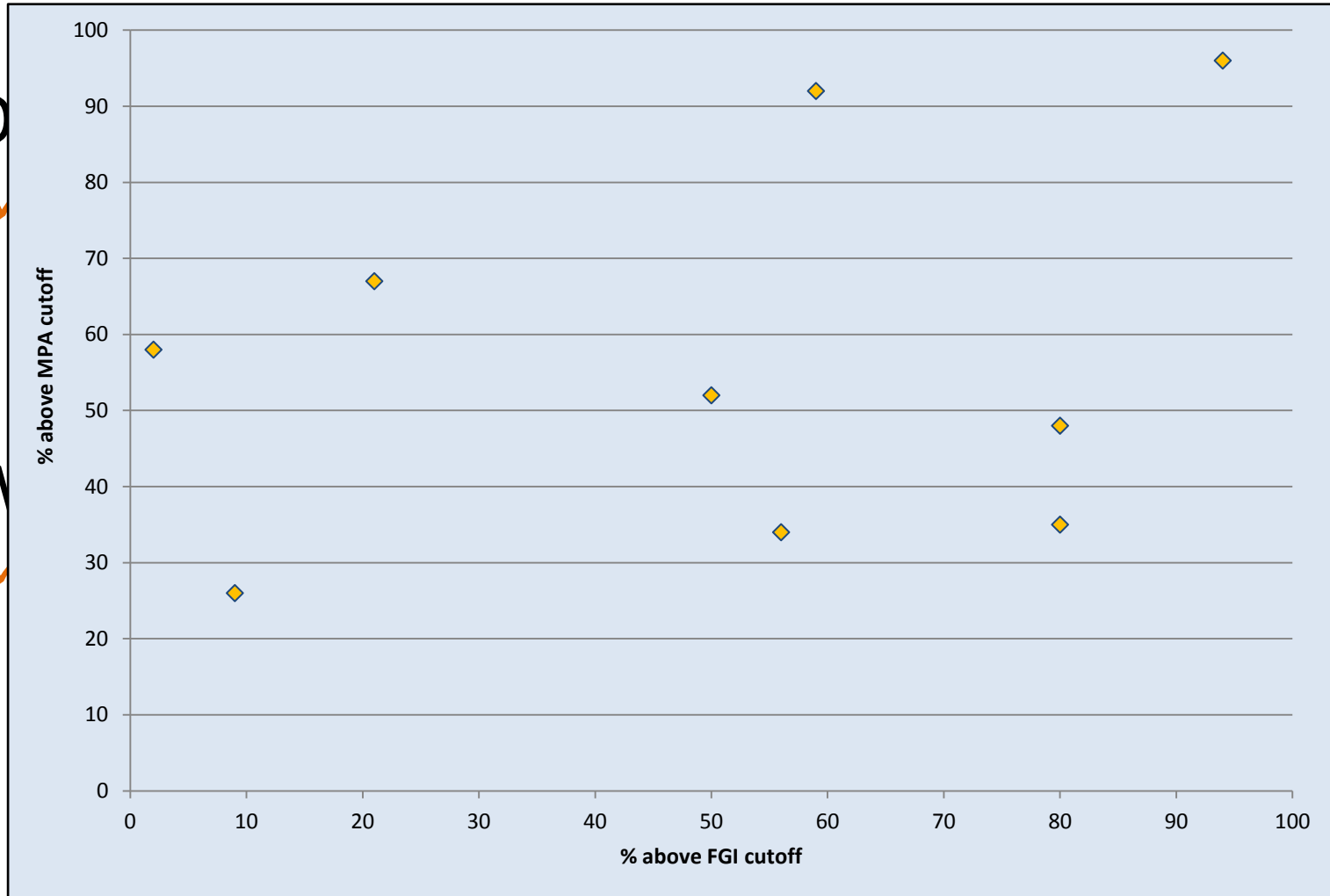
Comparison of prevalence rates given by various MPA and FGI cutoffs

- Objective
 - ✓ Assess to what extent the prevalence rate at-or-above a certain FGI cutoff matches the prevalence above a certain MPA cutoff
- What could be expected?
 - ✓ At best, prevalence rate at-or-above FGI cutoff = Prevalence rate at-or-above MPA cutoff

Comparison of prevalence rates given by various MPA and FGI cutoffs



Comparison of prevalence rates given by various MPA and FGI cutoffs



Comparison of prevalence rates given by various MPA and FGI cutoffs

- Objective
 - ✓ Assess to what extent the prevalence rate at-or-above a certain FGI cutoff matches the prevalence above a certain MPA cutoff
- What could be expected?
 - ✓ At best, prevalence rate at-or-above FGI cutoff = Prevalence rate at-or-above MPA cutoff
 - ✓ At worst, sites with higher FGI prevalence also have higher MPA prevalence, and sites with lower FGI prevalence also have lower MPA prevalence

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Mean MPA and percentage of women having consumed various food groups of interest at-or-above and below FGI cutoffs

- Objective
 - ✓ Explore how the quality of women's diet is reflected by the FGI prevalence at-or above the chosen FGI cutoff
- Method
 - ✓ Mean MPA among women reaching or not the chosen FGI cutoff, for all sites (weighted according to sample size)
 - ✓ % of women having consumed some nutrient-dense food groups among those reaching or not the chosen FGI cutoff, for all sites (weighted according to sample size)
 - At least one of the animal source food groups
 - At least two of the fruits and vegetables food groups
 - At least one of the legumes, nuts and seeds food groups



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