



# **Nigeria Book of Dietary Data Graphics**

Results from the 2024 Nigerian National Food Consumption and Micronutrient Survey









Participants of the 'Dietary Data Use Workshop' hosted by Intake - Center for Dietary Assessment at the Abuja Continental Hotel on August 12-14, 2024.

## **About the Nigeria Book of Dietary Data Graphics**

This book of graphics was created by the *Intake* – Center for Dietary Assessment as an input to the *Intake*-hosted 'Dietary Data Use Workshop', convened in Abuja, Nigeria, August 12–14, 2024. This book of graphics provides a visual representation of the results of the dietary component of the <u>2024 Nigerian National Food</u> Consumption and Micronutrient Survey.

This book of graphics is accompanied by interactive figures available at: https://www.intake.org/nigeria-dietary-data-visualizations.

Graphic illustrations of the outputs from the workshop are available <u>here</u>.

### **Recommended Citation**

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### **About Intake**

Intake is a Center for Dietary Assessment at FHI 360, established in 2016 with funding from the Gates Foundation. Intake aims to strengthen policies and programs to improve nutritional status in low- and middle-income countries (LMICs) by increasing the availability, quality, comparability, and use of dietary data. Intake provides flexible, on-demand technical assistance to governments for collecting, analyzing, and using dietary intake data for evidence-based decision-making in LMICs; develops tools and technologies to facilitate dietary data collection and analysis; and carries out research to advance dietary assessment methods and develop validated metrics of diet quality.

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# 1

# **Description of the Survey**

# 1.1 Survey Design and Objectives<sup>1</sup>

Data for the Nigeria National Food Consumption and Micronutrient Survey (NFCMS) was collected in 2021. The survey was a population-based cross-sectional survey. The main objective of the survey was to determine the micronutrient status, anthropometric status, and dietary intake of women of reproductive age (WRA) aged 15–49 years, pregnant women aged 15–49 years, and children aged 6–59 months; and the micronutrient status of non-pregnant adolescent girls aged 10–14 years; and to identify key factors associated with poor nutrition in these demographic groups.

The specific objectives related to diet included:

- To assess the food consumption of WRA and children aged 6–59 months, excluding breastmilk, to determine the usual intake of energy, protein, fat, and selected micronutrients, as well as the usual intake of specific nutrientdense foods relevant for food-related nutrition policies and programmes.
- 2. To determine the adequacy of nutrient intake among WRA and children aged 24–59 months to identify populations at risk of inadequate intake.
- 3. To assess infant and young child feeding practices for children aged 6–23 months and compare the nutrient density of their complementary feeding diets to recommendations.

For the dietary component of the survey, data were collected using a diet questionnaire (topics included infant feeding, biofortification, and fortification) immediately followed by a quantitative 24-hour dietary recall collected using the INDDEX24 Mobile App. A random sub-sample of respondents completed a repeat interview two to three days later.

Data for the survey were collected from all 6 regions of Nigeria: North Central, North East, North West, South East, South South, and South West. Sampling

within each region followed a two-stage random selection strategy. In the first stage, Enumeration Areas (EAs) were selected by Probability Proportional to Size (PPS) within each region. Sixty-five (65) EAs within each region were selected. In the second stage, eligible respondents for each sampling demographic group (i.e., pregnant women, non-pregnant women, and children aged 6–59 months) were randomly selected within the sampled EAs.

The final sample size for the dietary component of the survey (with a completed quantitative 24-hour dietary recall) was:

- 5241 non-pregnant women (697 lactating women and 4544 nonlactating women)
- 999 pregnant women
- 5020 children (1664 children 6–23 months and 3356 children 24–59 months)

For dietary intake, the results are presented separately for pregnant and non-pregnant women. In addition, data for non-pregnant women are presented separately for lactating women and non-pregnant, non-lactating (NPNL) women. For children, data are presented separately for children aged 6–23 months and children 24–59 months.

Data are disaggregated by area of residence (urban and rural) for pregnant women, non-pregnant women, children aged 6–23 months, and children aged 24–59 months.

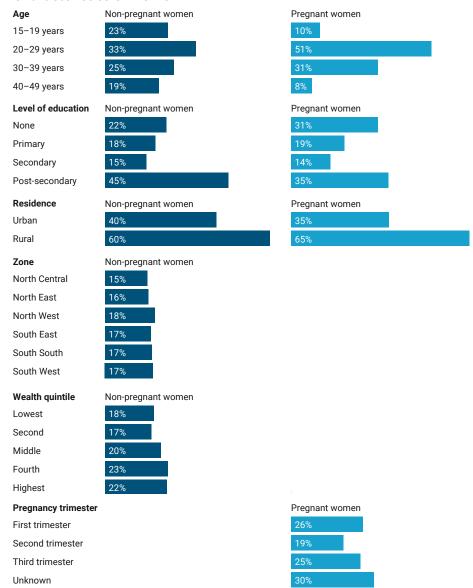
Data for non-pregnant women are disaggregated by geopolitical zone and wealth quintile<sup>2</sup>.

<sup>1</sup> The text for this section was adapted from (Federal Government of Nigeria (FGoN) and the International Institute of Tropical Agriculture (IITA), 2024).

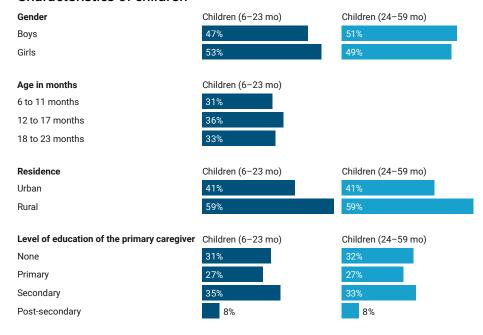
<sup>2</sup> Wealth quintiles were derived using the asset approach, whereby all household possessions were recorded to form a wealth index score.

# 1.2 Characteristics of the Population Groups

### Characteristics of women



### Characteristics of children



# 2

# **Energy and Nutrient Intakes for Women and Children (24–59 months)**

Usual energy, macronutrient, and micronutrient intakes were derived from the quantitative 24-hour dietary recall data collected for non-pregnant WRA, pregnant women, and children aged 24–59 months. Because requirements for energy and several nutrients are greater for lactating women (IOM, 2019), intakes are presented separately for lactating and non-lactating women. Usual intakes of the overall diet of children aged 6–23 months are not presented because breastmilk intakes were not measured in the survey.

The National Cancer Institute (NCI) method was used for analyses of usual nutrient and food intake. The NCI method implements statistical modelling using the information from those individuals with first and second recalls to estimate the within-person variation in nutrient and food intakes and estimates a distribution of intakes for the entire population or sub-population of interest that represents only the between-person variation.

Nutrient intake adequacy was estimated with the NCI method in the same modeling procedures that produce the usual intake distributions. The Estimated Average Requirements (EAR) from the Institute of Medicine (IOM) for the United States and Canada were used to assess the adequacy of micronutrient intakes (IOM, 2019), and the methodology recommended by the International Zinc Nutrition Consultative Group (IZiNCG) was used for to assess zinc adequacy (IZiNCG, 2004).

Usual intakes are presented as medians, as the distributions of nutrient intakes tend to be skewed. The EARs for nutrient intakes obtained from the Institute of Medicine (www.nap.edu), representing the average daily requirements for a population demographic group, are shown for comparison as footnotes.

Sample weights were applied to all analyses to account for the sampling design and non-response.

# 2.1 Energy Intake

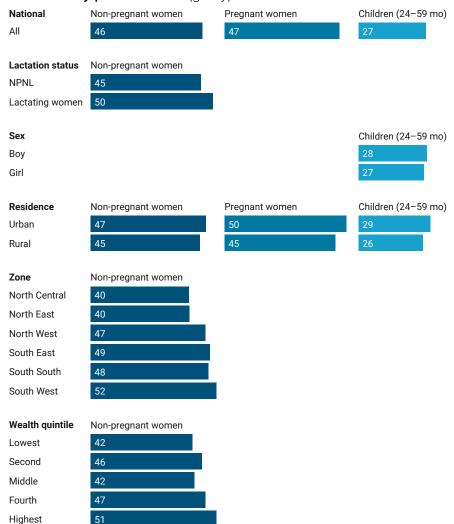
### Median daily energy intake (kcal/day)

<b>National</b> All	Non-pregnant women 1831	Pregnant women 1862	Children (24–59 mo) 1168
Lactation status NPNL Lactating women	Non-pregnant women 1807 1996		
Sex Boy Girl			Children (24–59 mo) 1202 1134
<b>Residence</b> Urban Rural	Non-pregnant women 1823 1840	Pregnant women 1949 1819	Children (24–59 mo) 1228 1135
Zone North Central North East North West South East South South South West	Non-pregnant women 1603 1687 1952 2003 1962 1805		
Wealth quintile Lowest Second Middle Fourth Highest	Non-pregnant women 1782 1872 1782 1818 1895		

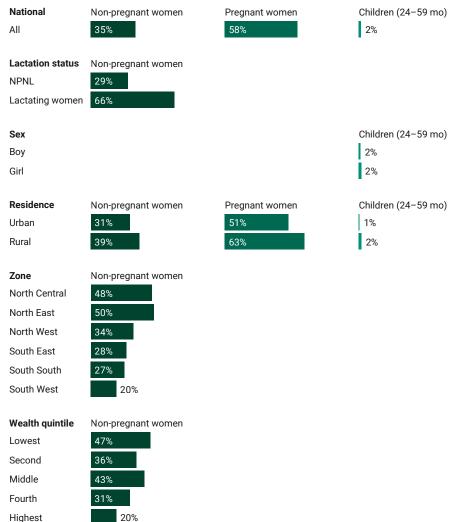
### 2.2 Macronutrient Intakes

## 2.2.1 Protein Intake and Prevalence of Inadequacy

### Median daily protein intake (g/day)



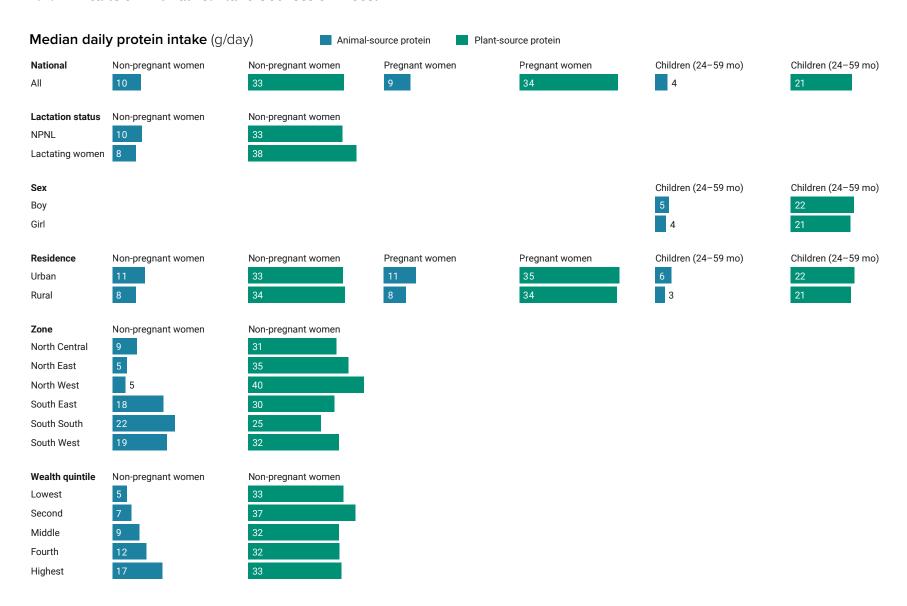
# Prevalence of protein inadequacy (% < EAR)



The EAR for protein is 38 g/day for NPNL women, 59 g/day for lactating women, and 50 g/day for pregnant women. The EAR for protein was derived from grams per kg of body weight using reference body weights (IOM, 2019)

The EAR for protein is 10-15 g/day for children 24-59 months. The EAR for protein was derived from grams per kg of body weight using reference body weights (IOM, 2019)

### 2.2.2 Intake of Animal vs. Plant-Sources of Protein



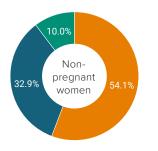
# 2.2.3 Carbohydrates and Fat intakes

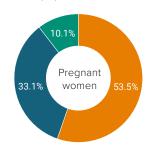
#### Median daily carbohydrates intake (g/day) Median daily fat intake (g/day) National Non-pregnant women Pregnant women Children (24-59 mo) National Non-pregnant women Pregnant women Children (24-59 mo) 249 68 248 ΑII 67 Non-pregnant women Lactation status Non-pregnant women Lactation status 245 NPNL NPNL Lactating women 270 73 Lactating women Children (24-59 mo) Sex Children (24-59 mo) Sex Boy Boy Girl Girl Children (24-59 mo) Residence Non-pregnant women Pregnant women Residence Non-pregnant women Pregnant women Children (24-59 mo) 254 245 Urban 67 Urban 247 Rural Rural Zone Non-pregnant women Zone Non-pregnant women 223 North Central 57 North Central North East 226 North East 62 267 North West North West 264 South East South East 77 258 South South South South 247 62 South West South West Wealth quintile Non-pregnant women Wealth quintile Non-pregnant women 245 65 Lowest Lowest 255 68 Second Second 241 66 Middle Middle 247 65 Fourth Fourth Highest 251 Highest

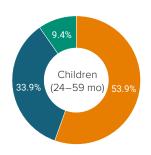
# 2.2.4 Energy Contribution from Macronutrients

# Contribution to energy intake (%) - National

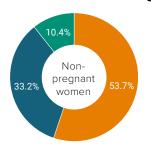
Carbohydrates (%) Fat (%) Protein (%)

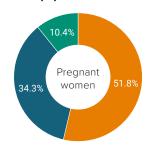


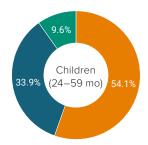




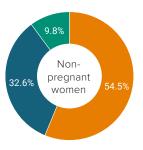
### Contribution to energy intake (%) – Urban

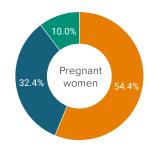


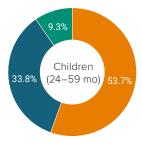




# Contribution to energy intake (%) - Rural







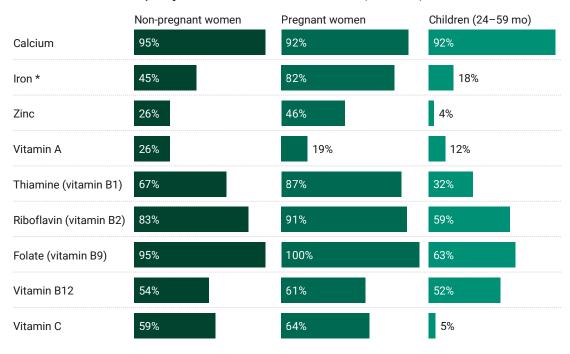
The acceptable % energy intake from protein ranges between 10% and 35% for women, 5% and 20% for children aged 24–36 months, and 10% and 30% for children aged 37–59 months (IOM, 2005). The acceptable % energy intake from fat ranges between 20% and 35% for all demographic groups (IOM, 2005).

The acceptable % energy intake from carbohydrates ranges between 45% and 60% for all demographic groups (IOM, 2005).

# 2.3 Micronutrient Intakes and Prevalence of Inadequacy

# 2.3.1 Overview of Prevalence of Inadequacy for Selected Micronutrients

Prevalence of inadequacy for selected micronutrients (% < EAR)

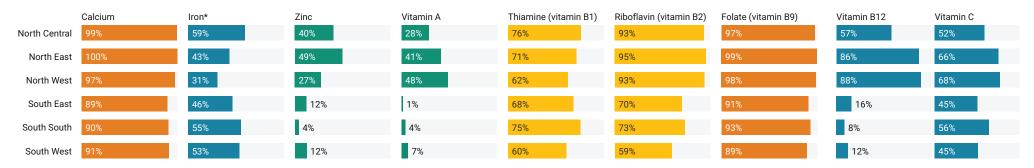


<sup>\*</sup> For iron, results for non-pregnant women are those for NPNL women. Lactating women were excluded from the analyses.

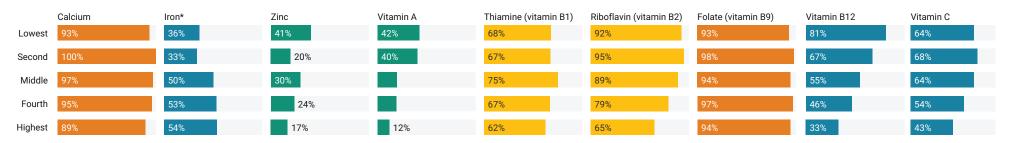
### Prevalence of micronutrient inadequacy for select micronutrients among non-pregnant women, by residence (% < EAR)

	Calcium	Iron*	Zinc	Vitamin A	Thiamine (vitamin B1)	Riboflavin (vitamin B2)	Folate (vitamin B9)	Vitamin B12	Vitamin C
Urban	93%	55%	25%	18%	67%	76%		49%	55%
Rural	96%	39%	26%	30%	67%	89%	95%	60%	62%

# Prevalence of micronutrient inadequacy for select micronutrients among non-pregnant women, by zone (% < EAR)



## Prevalence of micronutrient inadequacy for select micronutrients among non-pregnant women, by wealth quintile (% < EAR)



Dark orange represents nutrients with the highest prevalence of inadequacy (calcium and folate), followed by yellow (thiamine and riboflavin), followed by blue (vitamins B12 and C and iron) and then followed by green (zinc and vitamin A).

<sup>\*</sup> For iron, results for non-pregnant women are those for NPNL women. Lactating women were excluded from the analyses.

### 2.3.2 Calcium Intake and Prevalence of Inadequacy

#### Median daily calcium intake (mg/day) Prevalence of calcium inadequacy (% < EAR) National Non-pregnant women Pregnant women Children (24-59 mo) National Non-pregnant women Pregnant women Children (24-59 mo) 437 ΑII 95% 92% 92% Non-pregnant women Non-pregnant women Lactation status Lactation status NPNL 435 NPNL 95% 453 90% Lactating women Lactating women Children (24-59 mo) Children (24-59 mo) Sex Sex Boy Boy Girl Girl 93% Residence Non-pregnant women Pregnant women Children (24-59 mo) Residence Non-pregnant women Pregnant women Children (24-59 mo) Urban 455 Urban 93% 90% 88% 426 424 96% 93% 94% Rural Rural Zone Non-pregnant women Zone Non-pregnant women North Central 353 North Central 99% North East North East 100% 425 97% North West North West 569 89% South East South East South South 562 South South 90% South West 527 South West 91% Wealth quintile Wealth quintile Non-pregnant women Non-pregnant women 381 93% Lowest Lowest 425 100% Second Second 340 Middle 97% Middle 467 95% Fourth Fourth Highest 513 Highest 89%

The EAR for calcium for women aged 15-18 years is 1100 mg/day for NPNL women and 1000 mg/ day for pregnant and lactating women (IOM, 2019).

The EAR for calcium for women aged 19-49 years is 800 mg/day (IOM, 2019).

The EAR for calcium for children is 500 mg/day for ages 1-3 years and 800 mg/day for ages 4-5 years (IOM, 2019).

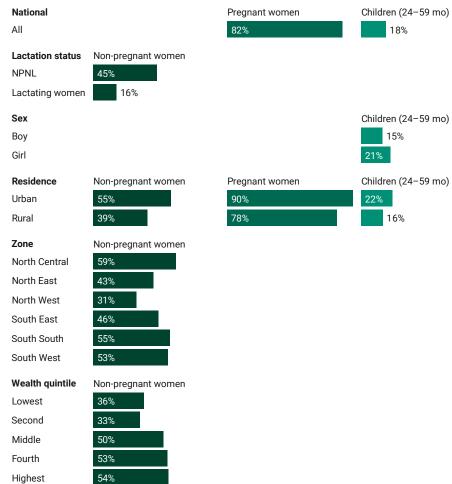
# 2.3.3 Iron Intake and Prevalence of Inadequacy

### Median daily iron intake (mg/day) National Pregnant women Children (24-59 mo) 16.5 Lactation status Non-pregnant women 15.5 NPNL Lactating women 17.4 Sex Children (24-59 mo) Boy Girl Children (24-59 mo) Residence Non-pregnant women Pregnant women 13.9 15.4 Urban 16.9 Rural Zone Non-pregnant women 13.4 North Central 15.9 North East 18.4 North West South East 15.2 14.0 South South South West 14.3 Wealth quintile Non-pregnant women 17.7 Lowest Second 14.7 Middle 14.3 Fourth

Results for non-pregnant women (lactating and non-lactating combined) are not presented due to the different methods that were used to model usual intakes. The data for non-pregnant women presented by residence, zone, and wealth quintile refer to non-pregnant, non-lactating (NPNL) women only.

The EAR for iron for women aged 15–18 years is 14.2 mg/day for NPNL women (assuming 10% bioavailability), 12.6 mg/day for lactating women (assuming 10% bioavailability), and 23 mg/day for pregnant women (assuming 18% bioavailability) (IOM, 2019).

# Prevalence of iron inadequacy (% < EAR)



The EAR for iron for women aged 19–49 years is 14.6 mg/day for NPNL women (assuming 10% bioavailability), 11.7 mg/day for lactating women (assuming 10% bioavailability), and 22 mg/day for pregnant women (assuming 18% bioavailability). (IOM, 2019).

The EAR for iron for children (assuming 10% bioavailability) is 3 mg/day for ages 1–3 years and 4.1 mg/day for ages 4–5 years (IOM, 2019).

14.1

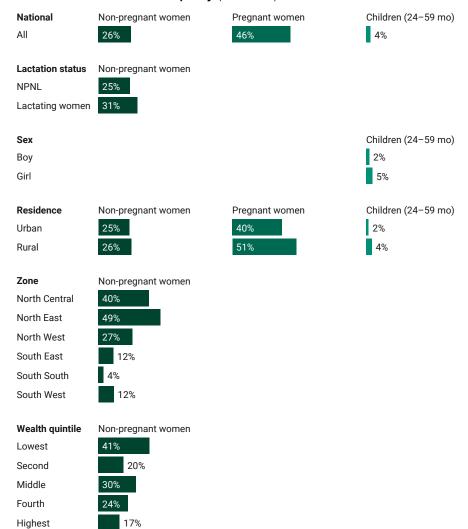
Highest

# 2.3.4 Zinc Intake and Prevalence of Inadequacy

### Median daily zinc intake (mg/day)

National	Non-pregnant women	Pregnant women	Children (24-59 mo)
All	8.1	8.3	4.7
Lactation status	Non-pregnant women		
NPNL	8.0		
Lactating women	8.6		
Sex			Children (24-59 mo)
Boy			4.8
Girl			4.6
Residence	Non-pregnant women	Pregnant women	Children (24-59 mo)
Urban	8.2	8.9	5.1
Rural	8.1	8.0	4.5
Zone	Non-pregnant women		
North Central	6.9		
North East	6.4		
North West	7.7		
South East	9.7		
South South	10.5		
South West	9.5		
Wealth quintile	Non-pregnant women		
Lowest	7.0		
Second	8.3		
Middle	7.7		
Fourth	8.5		

# Prevalence of zinc inadequacy (% < EAR)



The EAR for zinc for women aged 15–18 years (assumption of a mixed refined diet) is 6.8 mg/day for NPNL women, 10.9 mg/day for lactating, and 10.5 mg/day for pregnant women (IZiNCG 2004).

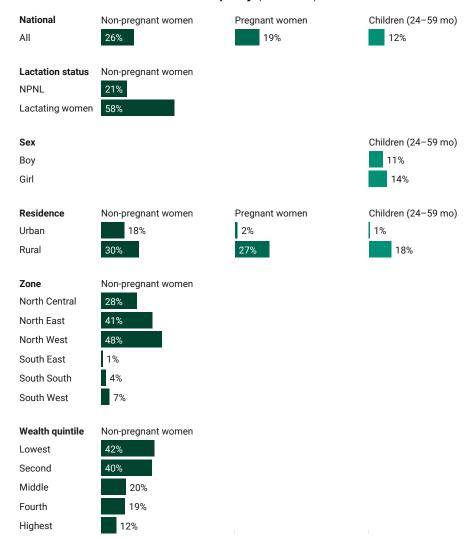
The EAR for zinc for women aged 19-49 years (assumption of a mixed refined diet) is 7.3 mg/day for NPNL women, 10.4 mg/day for lactating, and 9.5 mg/day for pregnant women (IZiNCG 2004).

The EAR for children (assumption of a mixed refined diet) is 2.5 mg/day for ages 1–3 years and 4.0 mg/day for ages 4-5 years (IZiNCG 2004).

# 2.3.5 Vitamin A Intake and Prevalence of Inadequacy

### **Median daily vitamin A intake** (µg RAE/day) National Non-pregnant women Pregnant women Children (24-59 mo) ΑII 808 866 Lactation status Non-pregnant women **NPNL** Lactating women 786 Children (24-59 mo) Sex Boy Residence Non-pregnant women Pregnant women Children (24-59 mo) 839 1010 Urban 785 Rural Zone Non-pregnant women North Central 698 597 North East 564 North West 1470 South East South South 1403 South West 987 Wealth quintile Non-pregnant women 618 Lowest 661 Second Middle 927

### Prevalence of vitamin A inadequacy (% < EAR)



The EAR for vitamin A for women aged 15–18 years is 485  $\mu$ g/day for NPNL women, 885  $\mu$ g/day for lactating women, and 530  $\mu$ g/day for pregnant women (IOM, 2019).

The EAR for vitamin A for women aged 19–49 years is  $500 \mu day$  for NPNL women,  $900 \mu day$  for lactating women, and  $550 \mu day$  for pregnant women (IOM, 2019).

The EAR for vitamin A for children is 210  $\mu g/day$  for ages 1–3 years and 275  $\mu g/day$  for ages 4–5 years (IOM, 2019).

Fourth

Highest

870

943

# 2.3.6 Thiamine (Vitamin B1) Intake and Prevalence of Inadequacy

### Median daily thiamine (vitamin B1) intake (mg/day) National Non-pregnant women Pregnant women Children (24-59 mo) 0.8 0.8 Lactation status Non-pregnant women 0.8 **NPNL** Lactating women 0.9 Children (24-59 mo) Sex Boy Girl Residence Non-pregnant women Pregnant women Children (24-59 mo) 0.8 Urban 0.8 0.8 0.8 Rural Zone Non-pregnant women North Central 0.7 North East 0.7 0.9 North West 0.8 South East 0.7 South South 0.8 South West Wealth quintile Non-pregnant women 0.8 Lowest 0.8 Second 0.7 Middle 0.8 Fourth

Highest

0.8

### Prevalence of thiamine (vitamin B1) inadequacy (% < EAR)

National  All  Lactation status	Non-pregnant women 67%  Non-pregnant women	Pregnant women 87%	Children (24–59 mo) 32%
NPNL	65%		
Lactating women			
Sex			Children (24-59 mo)
Boy			31%
Girl			33%
Residence	Non-pregnant women	Pregnant women	Children (24-59 mo)
Urban	67%	82%	27%
Rural	67%	89%	35%
Zone	Non-pregnant women		
North Central	76%		
North East	76%		
North East North West	76% 71% 62%		
North East North West South East	76% 71% 62% 68%		
North East North West	76% 71% 62%		
North East North West South East	76% 71% 62% 68%		
North East North West South East South South South West	76% 71% 62% 68% 75%		
North East North West South East South South	76% 71% 62% 68% 75%		
North East North West South East South South South West Wealth quintile	76% 71% 62% 68% 75% 60%  Non-pregnant women		
North East North West South East South South South West  Wealth quintile Lowest	76% 71% 62% 68% 75% 60%  Non-pregnant women 68%		
North East North West South East South South South West  Wealth quintile Lowest Second	76% 71% 62% 68% 75% 60%  Non-pregnant women 68% 67%		

The EAR for thiamine for women aged 15-49 years is 0.9 mg/day for NPNL women, 1.2 mg/ day for lactating women, and 1.2 mg/day for pregnant women (IOM, 2019).

The EAR for thiamine for children is 0.4 mg/day for ages 1–3 years and 0.5 mg/day for ages 4-5 years (IOM, 2019).

### 2.3.7 Riboflavin (Vitamin B2) Intake and Prevalence of Inadequacy

#### Median daily riboflavin (vitamin B2) intake (mg/day) Prevalence of riboflavin (vitamin B2) inadequacy (% < EAR) National Non-pregnant women Pregnant women Children (24-59 mo) National Non-pregnant women Pregnant women Children (24-59 mo) 0.6 0.6 ΑII 83% 91% 59% Non-pregnant women Non-pregnant women Lactation status Lactation status NPNL 0.6 **NPNL** 82% 0.6 93% Lactating women Lactating women Children (24-59 mo) Sex Children (24-59 mo) Sex Boy Boy 58% Girl 60% Girl Children (24-59 mo) Residence Non-pregnant women Pregnant women Children (24-59 mo) Residence Non-pregnant women Pregnant women 0.7 76% 83% 39% Urban Urban Rural 0.6 Rural 89% 96% Zone Non-pregnant women Zone Non-pregnant women 0.5 93% North Central North Central 0.5 North East 95% North East North West 0.6 North West 93% South East 0.7 South East 70% 0.7 73% South South South South South West 0.9 South West 59% Wealth quintile Wealth quintile Non-pregnant women Non-pregnant women 0.5 92% Lowest Lowest 0.5 95% Second Second Middle 0.5 Middle 89% 0.7 Fourth 79% Fourth 0.8 65% Highest Highest

The EAR for riboflavin for women aged 15–49 years is 0.9 mg/day for NPNL women, 1.2 mg/day for lactating women, and 1.3 mg/day for pregnant women (IOM, 2019). The EAR for riboflavin for children is 0.4 mg/day for ages 1–3 years and 0.5 mg/day for ages 4–5 years (IOM, 2019).

# 2.3.8 Folate (Vitamin B9) Intake and Prevalence of Inadequacy

### **Median daily folate (vitamin B9) intake** (µg/day) Children (24-59 mo) **National** Non-pregnant women Pregnant women ΑII 189 186 Lactation status Non-pregnant women 187 **NPNL** Lactating women 202 Children (24-59 mo) Sex Boy Girl Children (24-59 mo) Residence Non-pregnant women Pregnant women Urban 189 Rural 189 Zone Non-pregnant women 167 North Central 158 North East North West 178 223 South East South South 216 South West 223 Wealth quintile Non-pregnant women 171 Lowest Second 184 Middle 195 Fourth 197 Highest

# Prevalence of folate (vitamin B9) inadequacy (% < EAR)

National	Non-pregnant women	Pregnant women	Children (24–59 mo)
All	95%	100%	63%
Lactation status	Non-pregnant women	_	
NPNL	94%		
Lactating women	98%		
Sex			Children (24–59 mo)
Boy			62%
Girl			64%
GIII			04%
Residence	Non-pregnant women	Pregnant women	Children (24-59 mo)
Urban	95%	100%	54%
Rural	95%	100%	68%
Zone	Non-pregnant women	_	
North Central	97%		
North East	99%		
North West	98%		
South East	91%		
South South	93%		
South West	89%		
Wealth quintile	Non-pregnant women	-	
Lowest	93%	<u>l</u>	
Second	98%		
Middle	94%		
Fourth	97%		
Highest	94%		

The EAR for folate for women aged 15–18 years is 330 µg/day for NPNL women, 450 µg/day for lactating women, and 520 µg/day for pregnant women (IOM, 2019).

The EAR for folate for women aged 19–49 years is 320  $\mu$ g/day for NPNL women, 450  $\mu$ g/day for lactating women, and 520  $\mu g/day$  for pregnant women (IOM, 2019).

The EAR for folate for children is 120  $\mu$ g/day for ages 1–3 years and 160  $\mu$ g/day for ages 4–5 years (IOM, 2019).

# 2.3.9 Vitamin B12 Intake and Prevalence of Inadequacy

#### Median daily vitamin B12 intake (µg/day) **Prevalence of vitamin B12 inadequacy** (% < EAR) National Children (24-59 mo) National Children (24-59 mo) Non-pregnant women Pregnant women Non-pregnant women Pregnant women 54% 61% 0.7 ΑII 52% Non-pregnant women Lactation status Non-pregnant women Lactation status NPNL NPNL 53% 1.7 61% Lactating women Lactating women Sex Children (24-59 mo) Sex Children (24-59 mo) 0.7 Boy 52% Boy 0.7 52% Girl Girl Residence Non-pregnant women Pregnant women Children (24-59 mo) Residence Non-pregnant women Pregnant women Children (24-59 mo) 59% 1.0 Urban 49% 43% Urban 0.5 Rural 60% 66% 60% Rural Non-pregnant women Zone Zone Non-pregnant women 1.9 57% North Central North Central 86% North East North East North West 0.4 North West 88% 3.9 South East South East 16% South South 4.4 South South South West South West Wealth quintile Non-pregnant women Wealth quintile Non-pregnant women 81% Lowest 0.6 Lowest Second Second 67% 55% Middle Middle Fourth 2.3 Fourth 46% Highest Highest 33%

The EAR for vitamin B12 for women aged 15–49 years is 2.0  $\mu$ g/day for NPNL women, 2.4  $\mu$ g/day for lactating women, and 2.2  $\mu$ g/day for pregnant women (IOM, 2019). The EAR for vitamin B12 for children is 0.7  $\mu$ g/day for ages 1–3 years and 1.0  $\mu$ g/day for ages 4–5 years (IOM, 2019).

# 2.3.10 Vitamin C Intake and Prevalence of Inadequacy

#### Median vitamin C intake (mg/day) Prevalence of vitamin C inadequacy (% < EAR) National Non-pregnant women Children (24-59 mo) National Pregnant women Non-pregnant women Pregnant women ΑII 64% Lactation status Non-pregnant women Lactation status Non-pregnant women NPNL NPNL 53% 57 87% Lactating women Lactating women Children (24-59 mo) Sex Sex Boy Boy Girl Girl Residence Children (24-59 mo) Residence Non-pregnant women Pregnant women Non-pregnant women Pregnant women 69 59 55% 52% Urban Urban 56 Rural 62% 69% Rural Zone Non-pregnant women Zone Non-pregnant women 62 North Central North Central 52% 50 66% North East North East North West North West 68% 64 South East South East 45% 59 56% South South South South South West South West Wealth quintile Non-pregnant women Wealth quintile Non-pregnant women Lowest 64% Lowest 52 68% Second Second 64% Middle Middle 60 54% Fourth Fourth 66 Highest 43% Highest

The EAR for vitamin C for women aged 15–18 years is 56 mg/day for NPNL women, 96 mg/ day for lactating women, and 66 mg/day for pregnant women (IOM, 2019).

The EAR for vitamin C for women aged 19-49 years is 60 mg/day for NPNL women, 100 mg/ day for lactating women, and 70 mg/day for pregnant women (IOM, 2019).

The EAR for vitamin C for children is 13 mg/day for ages 1–3 years and 20 mg/day for ages 4-5 years (IOM, 2019).

Children (24-59 mo)

Children (24-59 mo)

Children (24-59 mo)

5%

6%

4%

4%

6%

# **Diet Quality Metrics for Women**

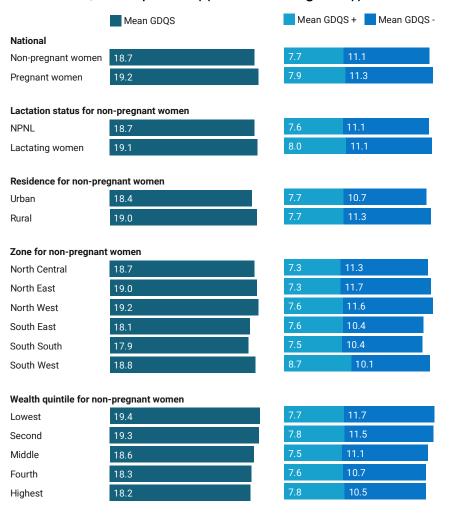
### **Minimum Dietary Diversity for Women (MDD-W)** 3.1

Median dietary diversity score for women (using a 10 food group indicator)	Percentage of	women who achieved MDD-W
National	National	
Non-pregnant women 3.0	Non-pregnant women	27.7%
Pregnant women 3.0	Pregnant women	28.8%
Lactation status for non-pregnant women	Lactation status for n	non-pregnant women
NPNL 3.0	NPNL	28.2%
Lactating women 3.0	Lactating women	24.6%
Residence for non-pregnant women	Residence for non-pr	egnant women
Urban 3.4	Urban	37.2%
Rural 2.7	Rural	20.4%
	7	••
Zone for non-pregnant women	Zone for non-pregnar  North Central	
North Central 2.9		25.0%
North East 2.6	North East	17.2%
North West 2.4	North West	13.3%
South East 3.5	South East	35.9%
South South 3.5	South South	36.4%
South West 4.1	South West	53.8%
Wealth quintile for non-pregnant women	Wealth quintile for no	on-pregnant women
Lowest 2.4	Lowest	14.3%
Second 2.6	Second	16.9%
Middle 2.9	Middle	24.1%
Fourth 3.4	Fourth	35.6%
Highest 3.8	Highest	44.3%

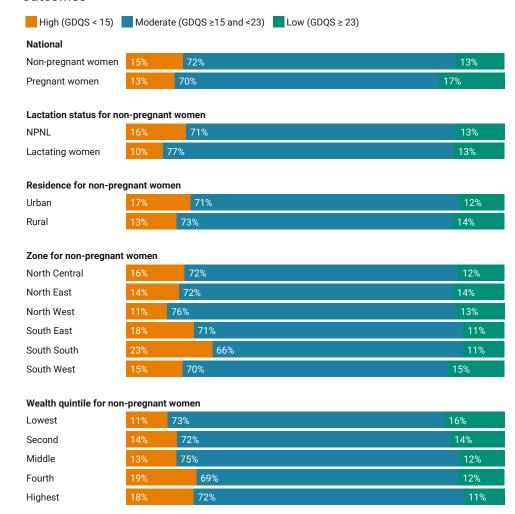
MDD-W assesses the proportion of women 15-49 years of age who consumed at least five of ten pre-defined food groups the previous day or night. It is a proxy indicator associated with higher micronutrient adequacy of the diet, through the measurement of diet diversity (FAO, 2021).

# Global Diet Quality Score (GDQS)

### Mean GDQS, GDQS positive (+) and GDQS negative (-)



### Percent of women at high, moderate, and low risk of poor diet quality outcomes



The Global Diet Quality Score (GDQS) assesses food consumption from the previous day and night for 16 healthy food groups, 7 unhealthy food groups and 2 food groups that are unhealthy when consumed in excess. The GDQS ranges between 0 and 49, the GDQS positive (+) has a possible scoring range of 0-32 while the GDQS negative (-) has a possible scoring range of 0-17. A higher GDQS+ and GDQS- is desired and reflective of more healthy food consumption patterns. A high risk for poor diet quality outcomes is defined as a GDQS < 15, a moderate risk for poor diet quality outcomes as a GDQS ≥15 and <23, and a low risk for poor diet quality outcomes as a GDQS ≥ 23 (Bromage et al., 2021).

# Global Diet Recommendations (GDR) Score

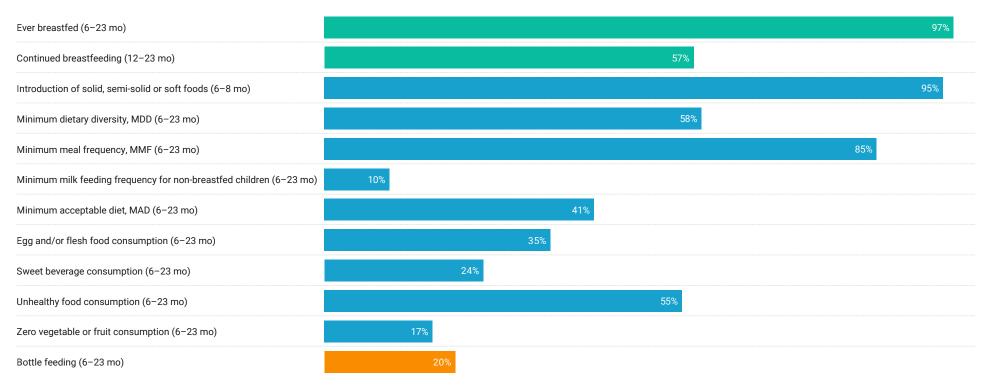
Median GDR		Median GDR p	otect and GDR risk		
National Non-pregnant women	11.6	National Non-pregnant women	Median GDR protect  3.6	Median GDR risk	
Pregnant women	11.9	Pregnant women	3.9	0.4	
Lactation status for no	on-pregnant women	Lactation status for no	on-pregnant women		
NPNL	11.5	NPNL	3.5	0.5	
Lactating women	12.0	Lactating women	4.0	0.4	
Residence for non-pre	egnant women	Residence for non-pre	gnant women		
Urban	10.9	Urban	3.2	0.7	
Rural	12.0	Rural	4.0	0.3	
Zone for non-pregnan	t women	Zone for non-pregnant women			
North Central	11.6	North Central	3.5	0.4	
North East	12.5	North East	4.2	0.2	
North West	12.5	North West	4.4	0.3	
South East	10.6	South East	2.9	0.7	
South South	10.5	South South	2.7	0.6	
South West	10.6	South West	3.1	0.9	
Wealth quintile for non-pregnant women		Wealth quintile for non-pregnant women			
Lowest	12.7	Lowest	4.3	0	
Second	12.2	Second	4.2	0.3	
Middle	11.6	Middle	3.6	0.4	
Fourth	10.9	Fourth	3.3	0.7	
Highest	10.5	Highest	3.0	0.9	

The Global Dietary Recommendations (GDR) score assesses food consumption from the previous day and night for nine health-protective food groups (NCD-Protect) and eight food groups to limit or avoid (NCD-Risk). The GDR score ranges from 0 to 18 expressed as an average score. A GDR score of 10 or more out of 18 is associated with meeting at least half of the WHO global dietary recommendations (Technical Consultation on Measuring Healthy Diets, 2021).

# 4 Diets of Infants and Young Children (6-23 months)

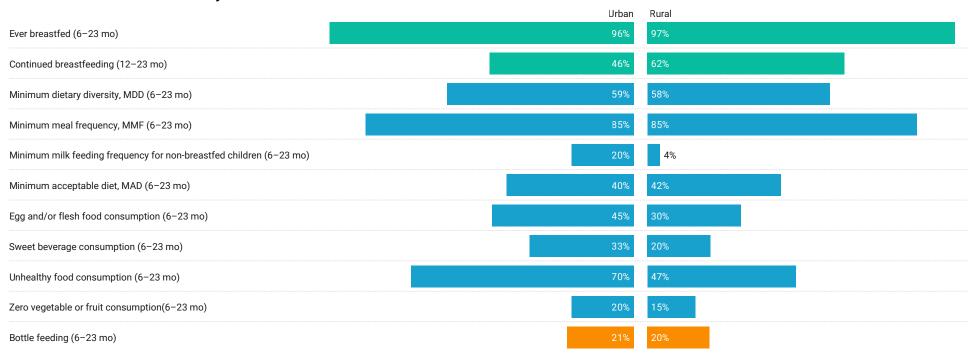
# **WHO/UNICEF IYCF Indicators**

### WHO/UNICEF IYCF indicators



Green bars represent breastfeeding indicators, blue bars represent complementary feeding indicators, and orange bars represent "other" indicators (WHO/UNICEF, 2021).

# WHO/UNICEF IYCF indicators by residence area



Green bars represent breastfeeding indicators, blue bars represent complementary feeding indicators, and orange bars represent "other" indicators (WHO/UNICEF, 2021).

### 4.1.1 WHO/UNICEF Breastfeeding Indicators

### Percentage of children aged 6-23 months who were ever breastfed

Children (6-23 mo)	97%
Residence (6-23 mo	
Urban	96%
Rural	97%
Sex (6-23 mo)	
Boys	95%
Girls	98%
Age group	
6-11 mo	99%
12-17 mo	98%
18-23 mo	93%

Indicator definition: Percentage of children born in the last 24 months who were ever breastfed (WHO/UNICEF, 2021).

# Percentage of children aged 12-23 months with continued breastfeeding

Children (12-23 mo)	57%	
Residence (12-23 m	)	
Urban	46%	
Rural	62%	
Sex (12-23 mo)		
Boys	54%	
Girls	59%	
Age group		
12-15 mo	83%	
16-19 mo	53%	
20-23 mo	25%	

Indicator definition: Percentage of children 12-23 months of age who were fed breast milk during the previous day (WHO/UNICEF, 2021).

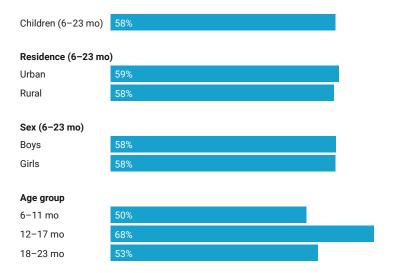
# 4.1.2 WHO/UNICEF Complementary Feeding Indicators

Percentage of children aged 6-8 months who consumed solid, semi-solid or soft foods during the previous day

Children (6-8 mo) 95%

Indicator definition: Percentage of infants 6-8 months of age who consumed solid, semi-solid or soft foods during the previous day (WHO/UNICEF, 2021).

# Percentage of children aged 6-23 months who achieved minimum dietary diversity



Indicator definition: Percentage of children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day (WHO/UNICEF, 2021).

# Percentage of children aged 6–23 months who achieved minimum meal frequency (MMF)

Children (6-23 mo)	85%					
Residence (6-23 mo)						
Urban	85%					
Rural	85%					
Sex (6-23 mo)						
Boys	87%					
Girls	83%					
Age range						
6-11 mo	79%					
12-17 mo	82%					
18-23 mo	94%					

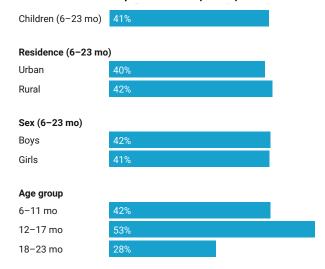
Indicator definition: Percentage of children 6–23 months of age who consumed solid, semi-solid or soft foods (but also including milk feeds for non-breastfed children) at least the minimum number of times during the previous day (WHO/UNICEF, 2021).

# Percentage of non-breastfed children aged 6–23 months who consumed at least two milk feeds

Children (6-23 mo)	10%
Residence (6-23 mo	)
Urban	20%
Rural	4%
Sex (6-23 mo)	
Boys	10%
Girls	10%
Age group	
6-11 mo	9%
12-17 mo	17%
18-23 mo	8%

Indicator definition: Percentage of non-breastfed children aged 6–23 months who consumed at least two milk feeds during the previous day (WHO/UNICEF, 2021)

# Percentage of children aged 6–23 months who consumed a minimum acceptable diet (MAD)

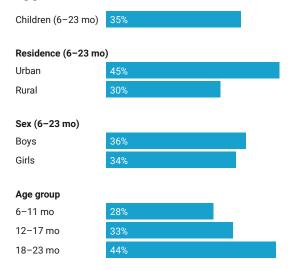


Indicator definition: Percentage of children 6–23 months of age who consumed a minimum acceptable diet during the previous day (WHO/UNICEF, 2021).

The criteria to meet a minimum acceptable diet are:

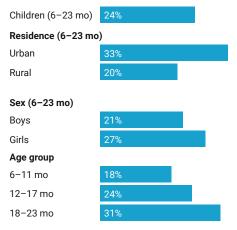
- For breastfed children: Received at least the minimum dietary diversity and minimum meal frequency for the child's age during the previous day;
- For non-breastfed children: Received at least the minimum dietary diversity and minimum meal frequency for the child's age during the previous day and received at least two milk feeds during the previous day (WHO/UNICEF 2021).

# Percentage of children aged 6-23 months who consumed egg and/or flesh food



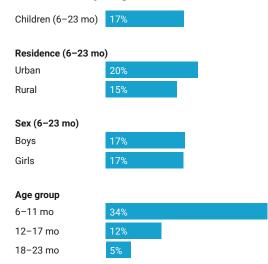
Indicator definition: Percentage of children 6-23 months of age who consumed egg and/or flesh food during the previous day (WHO/UNICEF, 2021).

# Percentage of children aged 6-23 months who consumed a sweet beverage



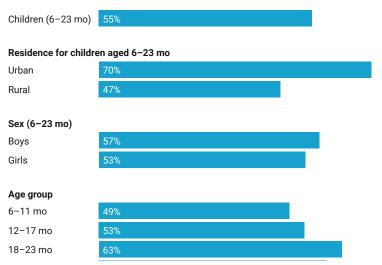
Indicator definition: Percentage of children 6-23 months of age who consumed a sweet beverage during the previous day (WHO/UNICEF, 2021).

# Percentage of children aged 6-23 months who did not consume any vegetables or fruits



Indicator definition: Percentage of children 6–23 months of age who did not consume any vegetables or fruits during the previous day (WHO/UNICEF, 2021).

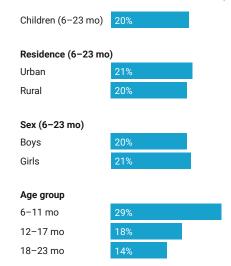
# Percentage of children aged 6–23 months who consumed foods classified as unhealthy



Indicator definition: Percentage of children 6–23 months of age who consumed selected sentinel unhealthy foods during the previous day (WHO/UNICEF, 2021).

### 4.1.3 Other IYCF Indicator

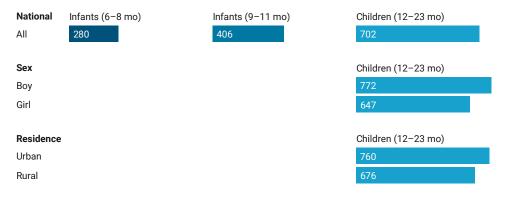
Percentage of children aged 6-23 months of age who were fed from a bottle with a nipple



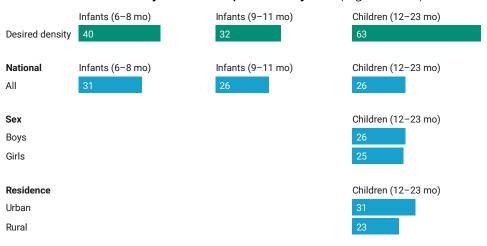
Indicator definition: Percentage of children 0–23 months of age who were fed from a bottle with a nipple during the previous day (WHO/UNICEF, 2021).

# **Nutrient Density of the Complementary Diet**

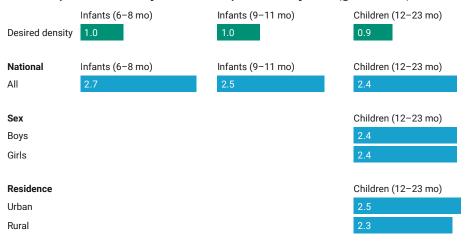
### Median daily energy intake from complementary foods (kcal/day)



### Median calcium density of the complementary diet (mg/100 kcal)



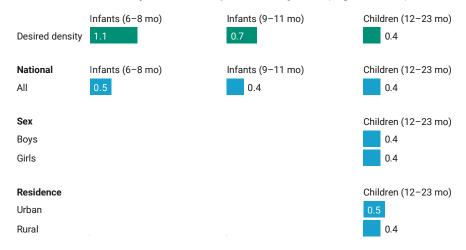
### Median protein density of the complementary diet (g/100 kcal)



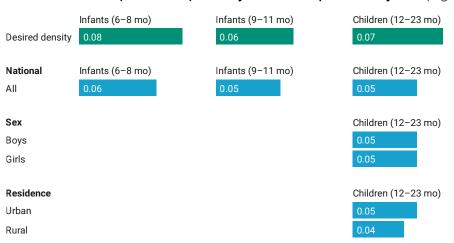
### Median iron density of the complementary diet (mg/100 kcal)

Desired density	Infants (6–8 mo) 5.3	Infants (9–11 mo) 3.5	Children (12–23 mo) 1.2
<b>National</b> All	Infants (6–8 mo)	Infants (9–11 mo)	Children (12–23 mo) 1.0
Sex Boys Girls			Children (12–23 mo) 1.0 1.0
<b>Residence</b> Urban Rural			Children (12–23 mo) 0.9 1.0

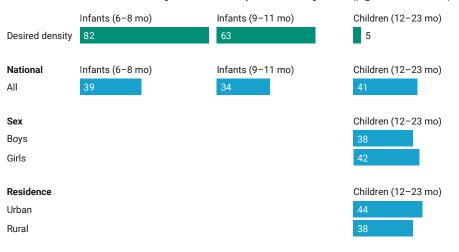
### Median zinc density of the complementary diet (mg/100 kcal)



### Median thiamine (vitamin B1) density of the complementary diet (mg/100 kcal)



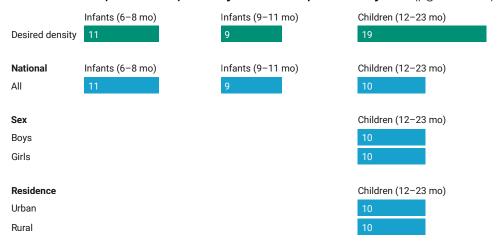
### Median vitamin A density of the complementary diet (µg RE/100 kcal)



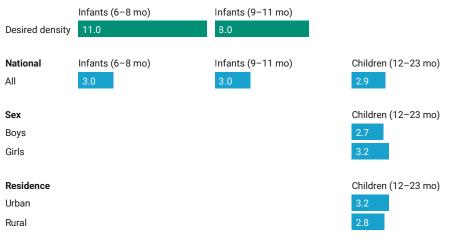
## Median riboflavin (vitamin B2) density of the complementary diet (mg/100 kcal)

Desired density	Infants (6-8 mo) 0.08	Infants (9–11 mo) 0.06	Children (12–23 mo) 0.06
<b>National</b> All	Infants (6–8 mo) 0.05	Infants (9–11 mo) 0.05	Children (12–23 mo) 0.04
Sex Boys Girls			0.04 0.04
<b>Residence</b> Urban Rural			Children (12–23 mo) 0.05 0.03

# Median folate (vitamin B9) density of the complementary diet (µg/100 kcal)



# Median vitamin C density of the complementary diet (mg/100 kcal)

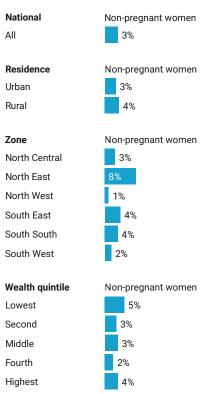


There is no desired nutrient density defined for vitamin C for children aged 12–23 months (Dewey et al., 2003).

# **Biofortification Coverage and Consumption**

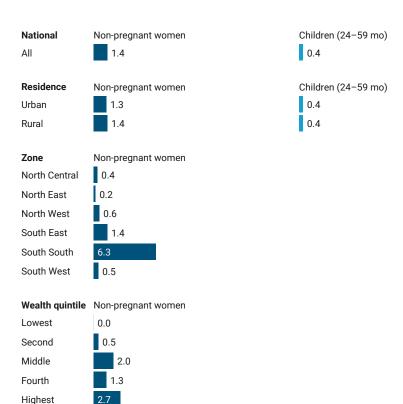
#### **Yellow Cassava** 5.1

# Percentage of non-pregnant women who consumed yellow cassava the previous 30 days (%)



Data were derived from the semi-structured diet questionnaire. Among the respondents who reported having consumed yellow cassava, the vast majority (77%) reported consuming it for one to nine days in the past 30 days, whereas about 2% reported consuming it daily.

# Mean daily intake of raw yellow cassava (g/day)



Mean intakes of raw yellow cassava were derived from the quantitative 24hour dietary recall data. The mean intakes include non-consumers. Yellow cassava contributed <1% of daily vitamin A intake.

#### **Orange-Fleshed Sweet Potato** 5.2

Percentage of non-pregnant women who consumed orange-fleshed sweet potato the previous 30 days (%)



Data were derived from the semi-structured diet questionnaire. Among the respondents who reported having consumed orange-fleshed sweet potato, the vast majority (84%) reported consuming it for one to nine days in the past 30 days, whereas none reported consuming it daily.

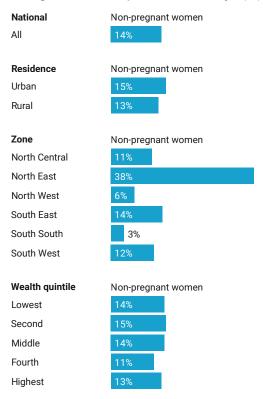
# Mean daily intake of orange-fleshed sweet potato (g/day)

National	Non-pregnant women	Children (24-59 mo)
All	0.3	0.1
Residence	Non-pregnant women	Children (24-59 mo)
Urban	0.1	0.1
Rural	0.4	0.1
Zone	Non-pregnant women	
North Central	0.1	
North East	0.5	
North West	0.3	
South East	0.2	
South South	0.4	
South West	0.0	
Wealth quintile	Non-pregnant women	
Lowest	0.5	
Second	0.3	
Middle	0.1	
Fourth	0.1	
Highest	0.4	

Mean intakes of orange-fleshed sweet potato were derived from the quantitative 24-hour dietary recall data. The mean intakes include nonconsumers. Orange-fleshed sweet potato contributed <1% of daily vitamin A intake.

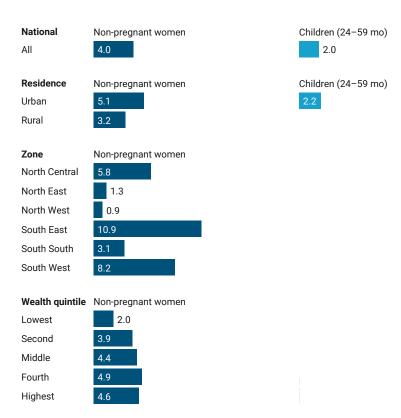
#### **Orange Maize** 5.3

# Percentage of non-pregnant women who consumed orange maize the previous 30 days (%)



Data were derived from the semi-structured diet questionnaire. Among the respondents who reported having consumed orange maize, just over half (57%) reported consuming it for one to nine days in the past 30 days, whereas about 16% reported consuming it daily.

### Mean daily intake of orange maize (g/day)

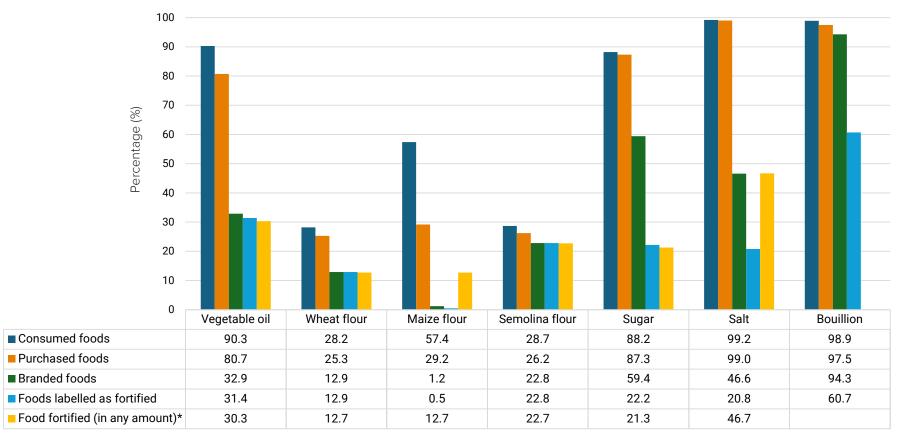


Mean intakes of orange maize were derived from the quantitative 24-hour dietary recall data. The mean intakes include non-consumers. Orange maize contributed <1% of daily vitamin A intake.

# **Fortification Coverage and Consumption**

#### **Fortification Coverage** 6.1

Coverage of selected food vehicles among households of the sampled non-pregnant women



<sup>\*</sup>Each brand of food vehicle (except bouillon) was linked to the average micronutrient content from laboratory analysis of multiple food samples for the given brand using secondary data (GAIN, 2021).

#### **Consumption of Food Vehicles for Fortification** 6.2

## Median daily intake of vegetable oil (g/day)

	,	(9,)/		,		9, /	
<b>National</b> All	Non-pregnant women 26	Pregnant women	Children (24–59 mo)	<b>National</b> All	Non-pregnant women	Pregnant women	Children (24-59 mo)
Lactation status NPNL Lactating women	Non-pregnant women 25 30			Lactation status NPNL Lactating women	Non-pregnant women 32 34		
<b>Sex</b> Boy Girl			Children (24–59 mo) 19 17	Sex Boy Girl			Children (24-59 mo) 21 20
<b>Residence</b> Urban Rural	Non-pregnant women 25 26	Pregnant women 29 29	Children (24–59 mo)  17  18	<b>Residence</b> Urban Rural	Non-pregnant women 53	Pregnant women 45 20	Children (24-59 mo) 39 12
Zone North Central North East North West South East South South South West	Non-pregnant women 22 32 40 17 13			Zone North Central North East North West South East South South South West	Non-pregnant women 22 22 29 44 37		
Wealth quintile Lowest Second Middle Fourth Highest	Non-pregnant women 31 31 24 22 23			Wealth quintile Lowest Second Middle Fourth Highest	Non-pregnant women 10 17 32 44 58		

Mean daily intake of wheat flour (g/day)

Usual intakes of vegetable oil were derived from the quantitative 24-hour dietary recall data. The median intakes include non-consumers.

Usual intakes of wheat flour were derived from the quantitative 24-hour dietary recall data. The median intakes include non-consumers.

#### Median daily intake of maize flour (g/day) Mean daily intake of semolina flour (g/day) Children (24-59 mo) National Non-pregnant women Pregnant women Children (24-59 mo) National Non-pregnant women women ΑII 2 Lactation status Non-pregnant women Lactation status Non-pregnant women **NPNL** 43 NPNL Lactating women 58 Lactating women 4 Sex Children (24-59 mo) Sex Children (24-59 mo) 2 Boy Boy Girl Girl 2 Residence Non-pregnant women Pregnant women Children (24-59 mo) Residence Non-pregnant women Children (24-59 mo) women Urban Urban 10 2 1 Rural Rural Zone Non-pregnant women Zone Non-pregnant women 54 5 North Central North Central 82 North East North East North West North West South East 3 South East 0 South South South South 2 South West South West Non-pregnant women Wealth quintile Wealth quintile Non-pregnant women Lowest 0 Lowest Second Second Middle Middle Fourth Fourth Highest Highest

Mean intakes of maize flour were derived from the quantitative 24-hour dietary recall data. The mean intakes include non-consumers.

Mean intakes of semolina flour were derived from the quantitative 24-hour dietary recall data. The mean intakes include non-consumers.

## Median daily intake of sugar (g/day)

	,	(5)	
<b>National</b> All	Non-pregnant women 11	Pregnant women 8	Children (24–59 mo)
Lactation status	Non-pregnant women		
NPNL	11		
Lactating women	10		
Sex Boy Girl		-	Children (24–59 mo) 11 11
Residence	Non-pregnant women	Pregnant women	Children (24-59 mo)
Urban	11	11	14
Rural	10	7	9
Zone	Non-pregnant women		
North Central	10		
North East	12		
North West	16		
North West South East	8		
	_		
South East	8		
South East South South	8 5		
South East South South	8 5		
South East South South South West  Wealth quintile Lowest	8 5 9  Non-pregnant women 11		
South East South South South West Wealth quintile	8 5 9 Non-pregnant women		
South East South South South West  Wealth quintile Lowest	8 5 9  Non-pregnant women 11		
South East South South South West  Wealth quintile Lowest Second	8 5 9 Non-pregnant women 11 10		

Usual intakes of sugar were derived from the quantitative 24-hour dietary recall data. The median intakes include non-consumers.

## Mean daily intake of rice (g/day)

<b>National</b> All	Non-pregnant women 55	Pregnant women 55	Children (24–59 mo)
Lactation status	Non-pregnant women		
NPNL	56		
Lactating women	52		
0.000		_	01:11 (04 50)
<b>Sex</b> Boy			Children (24–59 mo)
Girl			32
GIII			32
Residence	Non-pregnant women	Pregnant women	Children (24-59 mo)
Urban	74	75	51
Rural	40	43	27
Zone	Non-pregnant women		
North Central	62		
North East	42		
North West	52		
South East	58		
South South	53		
South West	68		
Marie International Co	N		
Wealth quintile Lowest	Non-pregnant women		
Second			
Secona Middle	46		
	55		
Fourth	68		
Highest	74		

Usual intakes of rice were derived from the quantitative 24-hour dietary recall data. The median intakes include non-consumers.

## Median daily intake of salt (g/day)

<b>National</b> All	Non-pregnant women 3.7	Pregnant women 3.9	Children (24–59 mo) 2.4
Lactation status NPNL Lactating women	Non-pregnant women 3.7 3.7		
Sex Boy Girl			Children (24–59 mo) 2.4 2.4
<b>Residence</b> Urban Rural	Non-pregnant women 3.4 4.0	Pregnant women 3.4 4.1	Children (24–59 mo) 2.1 2.6
Zone North Central North East North West South East South South South West	Non-pregnant women 3.4 3.1 3.5 5.2 4.7 3.5		
Wealth quintile Lowest Second Middle Fourth Highest	Non-pregnant women 3.9 3.7 3.7 3.5		

Usual intakes of salt were derived from the quantitative 24-hour dietary recall data. The median intakes include non-consumers.

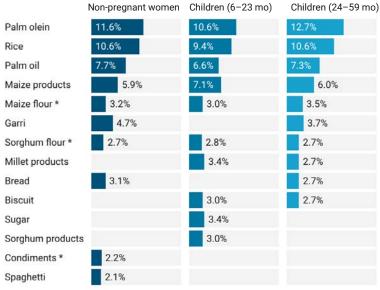
## Mean daily intake of bouillon (g/day)

<b>National</b> All	Non-pregnant women 5.7	Pregnant women 6.0	Children (24–59 mo) 3.8
Lactation status NPNL Lactating women	Non-pregnant women 5.4 7.3		
<b>Sex</b> Boy Girl			Children (24–59 mo) 3.8 3.7
<b>Residence</b> Urban Rural	Non-pregnant women 4.7 6.5	Pregnant women 4.8 6.6	Children (24–59 mo) 3.0 4.2
Zone North Central North East North West South East South South South West	Non-pregnant women 4.6 8.0 8.8 3.7 4.6 2.6		
Wealth quintile Lowest Second Middle Fourth Highest	Non-pregnant women 7.8 7.6 5.3 4.3		

Usual intakes of bouillon were derived from the quantitative 24-hour dietary recall data. The median intakes include non-consumers.

# Main Food Sources of Energy and Micronutrient Intake

#### Top 10 food sources of energy intake among women and children (% contribution)



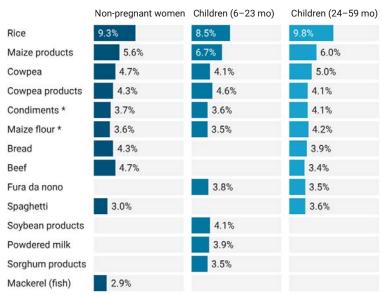
<sup>\*</sup> Relates to an ingredient in a mixed dish.

Top 10 food sources of energy intake among non-pregnant women by zone (% contribution)

	North Central	North East	North West	South East	South South	South West
Rice	12.5%	9.3%	8.6%	11.8%	11.0%	13.4%
Palm olein	11.7%	15.1%	16.1%	7.0%	5.9%	6.8%
Palm oil	8.4%	5.5%	3.7%	10.8%	12.2%	11.5%
Garri				10.3%	15.4%	7.1%
Maize products	10.2%	5.6%	10.1%			
Bread	2.6%			4.3%	4.8%	6.3%
Maize flour *		10.1%	4.3%			
Cassava flour *				5.0%	4.5%	3.3%
Sorghum flour *		6.2%	4.6%			
Beef	2.1%			2.7%	3.5%	
Banga				4.3%	4.0%	
Sorghum products	3.3%		3.4%			
Spaghetti		2.8%	3.1%			
White yam tuber				2.9%	2.8%	
Sugar	2.4%	3.0%				
Millet products			5.2%			
Cowpea products	2.1%					2.9%
Fura da nono			4.7%			
Cowpea				2.1%	2.3%	
Condiments *		3.2%				
Cowpea						2.8%
Soft drinks						2.7%
Semo swallow						2.7%
Maize grains grits		2.6%				
Rice products	2.3%					

<sup>\*</sup> Relates to an ingredient in a mixed dish.

#### Top 10 food sources of protein intake among women and children (% contribution)



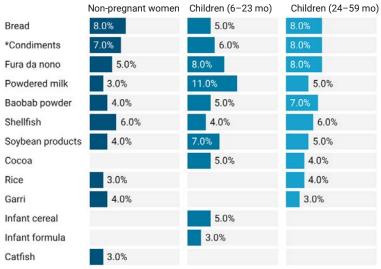
<sup>\*</sup> Relates to an ingredient in a mixed dish.

Top 10 food sources of protein intake among non-pregnant women by zone (% contribution)

No	orth Central	North East	North West	South East	South South	South West
Rice 1	1.0%	8.4%	7.9%	10.6%	9.8%	10.0%
Beef	5.4%	3.3%		7.1%	9.0%	5.5%
Cowpea	4.7%	3.7%		6.0%	6.5%	7.0%
Maize products 9.	.8%	5.7%	10.2%			
Bread	3.6%			6.1%	6.6%	7.6%
Cowpea products	5.7%	3.1%		4.2%	2.9%	6.8%
Maize flour*		11.7%	5.2%			
Mackerel fish				5.0%	6.3%	4.9%
Condiments*	3.8%	5.3%	4.8%			
Sorghum flour*		6.7%	4.9%			
Shellfish				5.8%	5.6%	
Catfish	3.0%				5.8%	
Spaghetti		4.2%	4.6%			
Hake fish						8.3%
Fura da nono			7.1%			
Groundnut		3.6%		2.7%		
Groundnut products			5.6%			
Millet products			5.6%			
Tilapia fish	2.8%				2.7%	
Sardine fish						5.4%
Soybean products			4.7%			
Sorghum products	3.7%					
Semo swallow						3.1%
Chicken				2.8%		
Melon seeds					2.7%	
Stockfish fish				2.6%		
Chicken eggs						2.5%

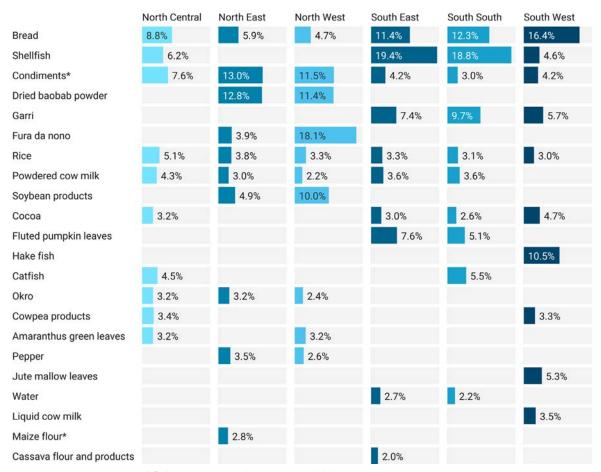
<sup>\*</sup> Relates to an ingredient in a mixed dish.

#### Top 10 food sources of calcium intake among women and **children** (% contribution)



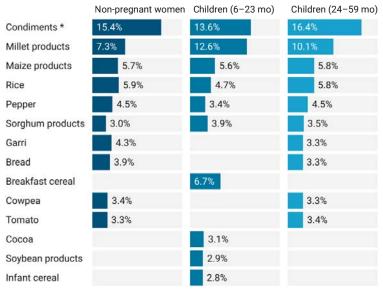
<sup>\*</sup> Relates to an ingredient in a mixed dish.

## Top 10 food sources of calcium intake among non-pregnant women by zone (% contribution)



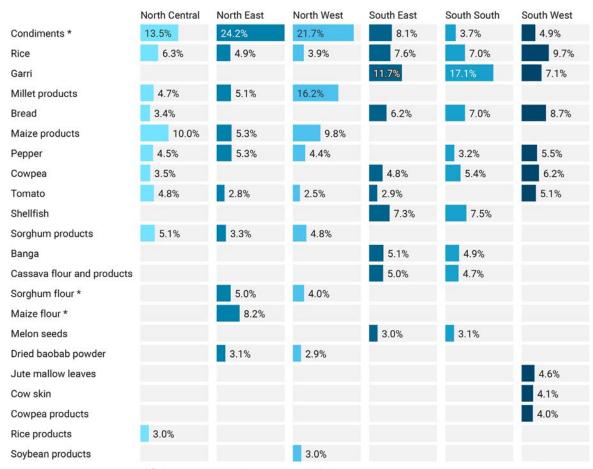
<sup>\*</sup> Relates to an ingredient in a mixed dish.

#### Top 10 food sources of iron intake among women and children (% contribution)



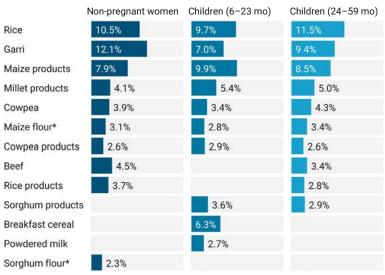
<sup>\*</sup> Relates to an ingredient in a mixed dish.

#### Top 10 food sources of iron intake among non-pregnant women by zone (% contribution)



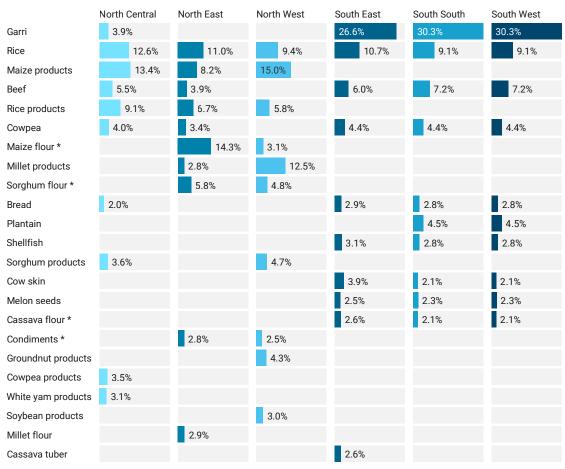
<sup>\*</sup> Relates to an ingredient in a mixed dish.

#### Top 10 food sources of zinc intake among women and children (% contribution)



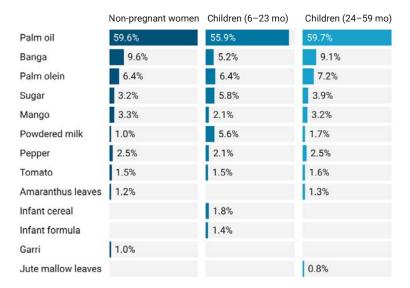
<sup>\*</sup> Relates to an ingredient in a mixed dish.

Top 10 food sources of zinc intake among non-pregnant women by zone (% contribution)



<sup>\*</sup> Relates to an ingredient in a mixed dish.

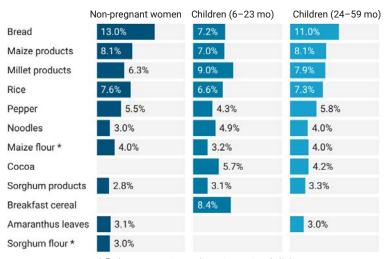
#### Top 10 food sources of vitamin A intake among women and children (% contribution)



Top 10 food sources of vitamin A intake among non-pregnant women by zone (% contribution)

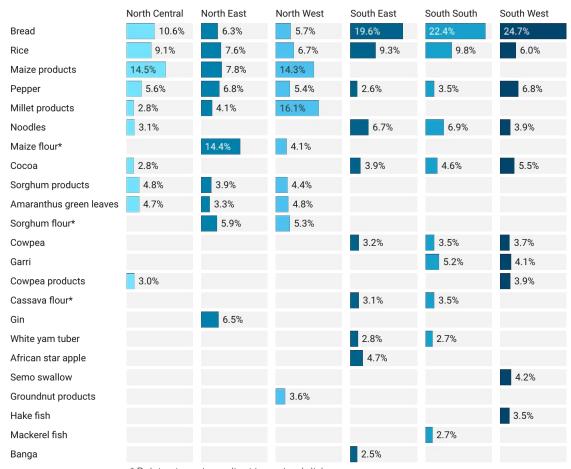
	North Central	North East	North West	South East	South South	South West
Palm oil	64.7%	60.3%	51.8%	51.8%	57.2%	72.5%
Banga				27.3%	24.3%	1.3%
Palm olein	7.0%	10.5%	13.6%	2.7%	2.0%	3.5%
Mango	4.2%	5.1%	6.2%	2.5%	1.6%	1.2%
Sugar	4.1%	5.9%	6.5%	1.1%		1.9%
Pepper	2.2%	4.3%	5.0%	0.9%	1.0%	2.0%
Tomato	2.5%	1.7%	2.1%			1.6%
Amaranthus green leave	2.2%	1.8%	3.0%			
Garri				1.9%	2.7%	
Powdered cow milk	1.3%	1.1%	1.3%		0.8%	
Carrot	1.7%		1.1%	1.4%		
Water leaf				1.1%	2.0%	
Margarine	1.1%			1.0%	0.7%	
Jute mallow leaves						2.6%
Chicken eggs					0.7%	1.3%
Fura da nono			1.9%			
Wheat products						1.8%
Dried baobab powder		0.7%				
Kanaski leaves		0.7%				

#### Top 10 food sources of thiamine (vitamin B1) intake among women and children (% contribution)



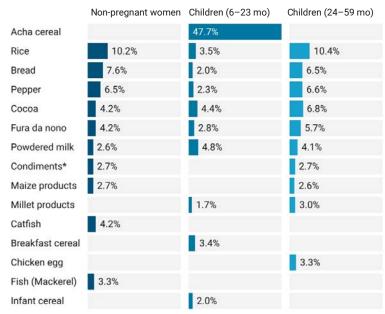
<sup>\*</sup> Relates to an ingredient in a mixed dish.

Top 10 food sources of thiamine (vitamin B1) intake among non-pregnant women by zone (% contribution)



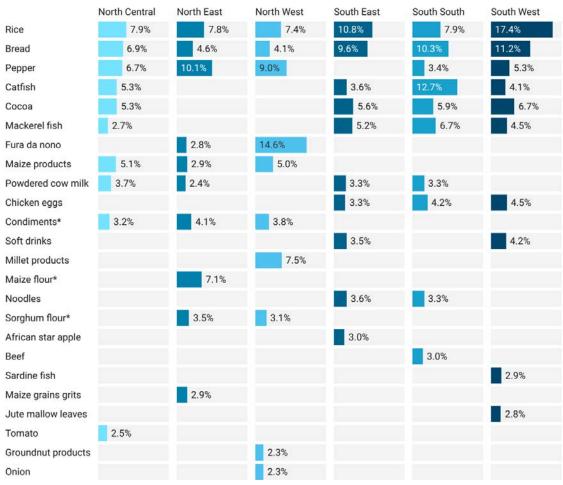
<sup>\*</sup> Relates to an ingredient in a mixed dish.

## Top food 10 sources of riboflavin (vitamin B2) intake among women and children (% contribution)



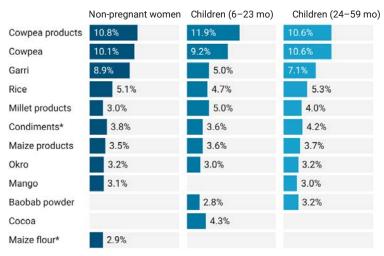
<sup>\*</sup> Relates to an ingredient in a mixed dish.

Top 10 food sources of riboflavin (vitamin B2) intake among non-pregnant women by zone (% contribution)



<sup>\*</sup> Relates to an ingredient in a mixed dish.

#### Top 10 food sources of folate (vitamin B9) intake among women and children (% contribution)



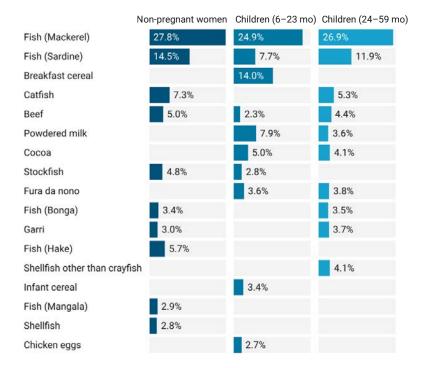
<sup>\*</sup> Relates to an ingredient in a mixed dish.

Top 10 food sources of folate (vitamin B9) intake among non-pregnant women by zone (% contribution)

	North Central	North East	North West	South East	South South	South West
Cowpea products	14.2%	8.5%	9.7%	9.4%	6.8%	15.6%
Cowpea	9.8%	8.6%	6.0%	11.8%	12.6%	14.7%
Garri	2.7%			19.4%	27.7%	11.09
Rice	5.9%	5.5%	4.7%	5.3%	5.1%	4.9%
Condiments*	3.3%	4.5%	6.1%	3.3%	2.4%	
Mango	3.6%	4.2%	4.3%	3.3%	2.2%	
Maize products	6.2%	3.8%	7.1%			
Cassava starch flour	5.3%					8.8%
Okro	5.3%	4.8%	3.6%			
Maize flour*		13.2%				
Bread				3.6%	3.9%	4.6%
Dried baobab powder		5.2%	5.0%			
Millet products			8.8%			
White yam tuber				3.5%	3.3%	
Groundnut products			5.9%			
Cocoa				2.3%		3.1%
Groundnut				2.6%	2.3%	
Chicken eggs					2.2%	2.6%
Sorghum flour*		3.4%				
Jute mallow leaves						3.3%
White yam products						2.9%
Onion	2.4%					

<sup>\*</sup> Relates to an ingredient in a mixed dish.

## Top 10 food sources of vitamin B12 intake among women and children (% contribution)

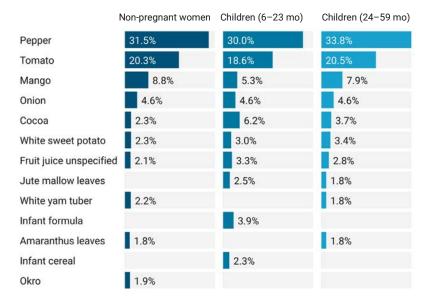


Top 10 food sources of vitamin B12 intake among non-pregnant women by zone (% contribution)

	North Central	North East	North West	South East	South South	South West
Mackerel fish	25.0%	18.6%	5.2%	33.3%	33.3%	29.6%
Sardine fish	11.6%	20.3%	23.3%	4.2%	5.3%	24.0%
Catfish	10.4%	11.0%	10.7%	4.0%	9.4%	3.7%
Beef	7.2%	8.6%	6.7%	4.5%	4.7%	3.4%
Stockfish fish	3.2%	5.5%	5.7%	12.4%	5.3%	
Fura da nono			21.8%			
Hake fish	3.7%				3.4%	12.8%
Tilapia fish	7.2%	3.9%	4.5%	1.8%		
Mangala fish		5.7%		10.8%		
Bonga fish	2.8%	3.5%		3.4%	5.8%	
Garri			3.6%		3.5%	3.4%
Shellfish				5.6%	4.5%	
Powdered cow milk	2.9%	3.2%	3.5%			
Shellfish other than crayfish					8.5%	
Cassava starch flour	4.0%					
Goat		3.2%				
Cassava flour *						3.1%
Soft drinks						2.4%
Cocoa						2.4%
Offals				2.3%		
Chicken eggs						2.2%
Tiger nut milk			1.7%			

<sup>\*</sup> Relates to an ingredient in a mixed dish.

## Top 10 food sources of vitamin C intake among women and children (% contribution)



Top 10 food sources of vitamin C intake among non-pregnant women by zone (% contribution)

	North Central	North East	North West	South East	South South	South West
Pepper	30.3%	40.1%	34.6%	13.9%	19.8%	37.3%
Tomato	23.8%	19.2%	20.4%	15.0%	14.0%	25.1%
Mango	8.6%	11.0%	12.3%	9.6%	7.0%	3.1%
Onion	4.2%	5.2%	5.8%	3.4%	4.1%	3.5%
White yam tuber	2.8%	1.4%		5.2%	5.6%	1.3%
Cocoa	2.4%			3.5%	4.0%	4.1%
Pawpaw				3.7%	5.1%	
Cassava flour and product				4.1%	3.9%	
White sweet potato		2.9%	4.9%			
Fruit juice unspecified		2.6%	2.1%			1.5%
Jute mallow leaves	2.4%					5.9%
Water leaf					4.5%	1.3%
Amaranthus green leave	2.4%	2.1%	3.3%			
Guava				5.4%		
Africanstar apple				5.1%		
Okro	3.4%	1.8%	1.3%			1.7%
Plaintain					3.2%	
Yellow sweet potato			2.1%			
Cabbage			1.3%			
Maize flour *		1.2%				
Orange	4.1%					

<sup>\*</sup> Relates to an ingredient in a mixed dish.

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