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Minimum Dietary Diversity for Women

A Guide to Measurement

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Minimum Dietary Diversity for Women

A Guide to Measurement

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Abbreviations and acronyms

CAPI	Computer-Assisted Personal Interviewing
FAO	Food and Agriculture Organization of the United Nations
FBDG	Food-based dietary guidelines
FCS	Food Consumption Score
HDDS	Household Dietary Diversity Score
IYCF	Infant and young child feeding
MDD	Minimum Dietary Diversity
MDD-W	Minimum Dietary Diversity for Women of Reproductive Age
MSG	Monosodium glutamate
NRV	Nutrient Reference Value
RE	Retinol equivalents
RAE	Retinol activity equivalents
UHT	Ultra-high temperature
USAID	U.S. Agency for International Development
WDDS	Women's Dietary Diversity Score
WFP	World Food Programme
WHO	World Health Organization
WRA	Women of reproductive age

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
- Brief descriptions of the ten MDD-W food groups
- Detailed food lists for the food groups
- "Problem foods" that are difficult to classify
- Model questionnaires to be adapted: open recall and list based method
- Translating and adapting the questionnaire
- Choosing and training enumerators
- Example of instructions for enumerators
- Tabulating the MDD-W indicator
- Recommendations for presenting MDD-W results

COMMON PITFALLS

Improper uses of MDD-W

- Do not use to assess diet quality of individual women.
- Do not use as a basis for developing dietary guidance; use standard best practices from the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO).
- Do not use to develop behaviour change messages; use standard best practices, for example, toolkits found from Alive & Thrive, The CHANGE Project, The C-Change Project, and K4Health.

Inadequate or incorrect preparation of questionnaires

- If you cannot afford to adapt a model questionnaire to your context, reconsider collecting data for this indicator. Model questionnaires for open recalls and list-based methods are available. Guidance on adaptation is available.
- Do not drop or combine required food groups (rows) that are included on the model questionnaire.

Incorrect comparisons with other MDD-W surveys

- Do not compare survey results from different seasons or agro-ecological zones without considering seasonal and harvest patterns. See guidance in Appendix 1.
- In pre-post designs, do not change the questionnaire and then compare between baseline and endline.

Section 1. Introduction

Background

Women of reproductive age (WRA)[1] are often nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Requirements for most nutrients are higher for pregnant and lactating women than for adult men (National Research Council, 2006; World Health Organization [WHO]/Food and Agriculture Organization of the United Nations [FAO], 2004). Outside of pregnancy and lactation, other than for iron, requirements for WRA may be similar to or lower than those of adult men, but because women may be smaller and eat less (fewer calories), they require a more nutrient-dense diet (Torheim and Arimond, 2013)[2]. Insufficient nutrient intakes before and during pregnancy and lactation can affect both women and their infants. Yet in many resource-poor environments, diet quality for WRA is very poor, and there are gaps between intakes and requirements for a range of micronutrients (Arimond et al., 2010; Lee et al. 2013).

These vulnerabilities and gaps in diet quality have been recognised for a long time. However, despite decades of appeals to improve women's diet quality and nutrition, there has been little programmatic action. Historically, one major impediment has been a lack of effective platforms and programmes reaching adolescent girls and WRA outside of prenatal care. A lack of indicators to allow for assessment, advocacy and accountability has been another constraint.

The Minimum Dietary Diversity for WRA (MDD-W)[3] indicator defined and described in this document is a food group diversity indicator that has been shown to reflect one key dimension of diet quality: micronutrient adequacy, summarised across 11 micronutrients (Martin-Prével et al., 2015)[4]. The indicator constitutes an important step towards filling the need for indicators for use in national and subnational assessments. Such indicators must be relatively simple to collect and suitable for large surveys[5].

Promotion of diverse diets is one of several approaches to improving micronutrient nutrition for WRA; additional diet quality indicators would be needed in settings where other strategies, including fortification, biofortification and/or supplementation, are used. Furthermore, diet quality is multidimensional. In addition to micronutrient adequacy, high-quality diets are characterised by balance in intake of protein, carbohydrates and fat (Institute of Medicine, 2005) and moderation in consumption of certain foods – those low in nutrient density and those associated with increased risks for chronic disease (George et al., 2014). In the context of rapid nutrition transitions in many

1 For the purposes of this document and indicator, WRA are defined as those 15–49 years of age.

2 "Nutrient density" refers to the ratio of nutrients (such as vitamins and minerals) to the energy content of foods.

3 Additional background on the indicator is available at: http://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw.

4 The 11 micronutrients were vitamin A, thiamine, riboflavin, niacin, vitamin B6, folate, vitamin B12, vitamin C, calcium, iron and zinc. See Arimond et al., 2010, and Martin-Prével et al., 2015, for the rationale for selection of micronutrients and for methods and results of a multistage research process assessing and comparing candidate indicators. See http://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw for a description of a 2014 consensus meeting where stakeholders reviewed results and finalised indicator selection.

5 Many other indicators of diet quality can be generated from more detailed dietary surveys (e.g. those employing repeat quantitative 24-hour recalls or weighed food records), but at present detailed quantitative surveys are not feasible and affordable for repeated implementation in most low-income countries.

low- and middle-income countries, additional simple and feasible indicators are needed to reflect these dimensions of balance and moderation.

It is beyond the scope of this guide to describe or operationalise a full set of indicators for diet quality or nutrition for WRA. But consumption of food items from diverse food groups is universally recommended, whether or not other strategies for improving nutrition are in place[6], and similarly, an indicator of food group diversity is relevant globally.

Indicator definition

The MDD-W is so named to harmonise with a similar Minimum Dietary Diversity (MDD) indicator for infants and young children (WHO, 2008) (see p. 4 for a comparison of several food group diversity indicators currently in use).

MDD-W is a dichotomous indicator of whether or not women 15–49 years of age[7] have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15–49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality.

The ten food groups are:

1. Grains, white roots and tubers, and plantains
2. Pulses (beans, peas and lentils)
3. Nuts and seeds
4. Dairy
5. Meat, poultry and fish
6. Eggs
7. Dark green leafy vegetables
8. Other vitamin A-rich fruits and vegetables
9. Other vegetables
10. Other fruits

The food groups are described and defined in **Section 2**, and **Appendix 2** provides a comprehensive list of specific food items comprising each of the ten groups.

Appropriate uses of the indicator

The MDD-W was developed as a proxy indicator to reflect the micronutrient adequacy of women's diets. The main use of the MDD-W is for assessment at national and subnational levels. It is a **population-level indicator** based on a recall period of a single day and night, so although data are collected from individual women, the indicator cannot be used to describe diet quality for an individual woman. This is because of normal day-to-day variability in individual intakes.

Groups of WRA where a higher proportion consume food items from at least five of the ten food groups are likely to have higher micronutrient adequacy than other groups that have a lower proportion of women achieving the threshold of food items from at least five food groups. Put another way, a higher prevalence of MDD-W is a proxy for better micronutrient adequacy among WRA in the population. Groups of WRA who consume food items from five or more of the ten groups are also highly likely to consume at least one animal-source food and either pulses or nuts/seeds and food items from two or more of the fruit/vegetable food groups (Martin-Prével et al., 2015).

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6 See, for example, the WHO Healthy Diet Fact Sheet (http://www.who.int/mediacentre/factsheets/fs394/en/), which summarises several WHO and FAO reports and advises that a healthy diet contains fruits, vegetables, pulses, nuts and whole grains.

7 That is, women who have reached their 15th birthday but who have not yet reached their 50th birthday. This is sometimes expressed as aged 15.0 to 49.9 years.

The MDD-W can be used:

- As a proxy to describe one important dimension of women's diet quality (micronutrient adequacy) in national and subnational assessments;
- To compare with previous assessments, so long as survey timing accounts for seasonality[8].

The indicator should not be used to:

- Screen individuals for selection for interventions, nor to identify individuals at risk for poor intakes.

In the context of programmes, this indicator may be useful when the programme design, activities and impact pathway indicate a potential to increase food group diversity. Note that many agricultural and health sector projects may improve nutrition, but only some will do so by increasing food group diversity.

In many contexts, it will also be important to increase the **quantity** of nutrient-dense food groups that are accessible and consumed by target groups. Programme users should note that consumption of food items from five or more food groups, while useful as a population-level benchmark, does not ensure micronutrient adequacy for the population, particularly if quantities of micronutrient-dense foods consumed are too small.

Distinction between food group diversity indicators and food-based dietary guidelines

Indicators and guidelines are often confused with each other. In the case of dietary diversity indicators, this may be because many countries have developed food-based dietary guidelines (FBDG) and graphics (pyramids, plates, etc.) that provide guidance to populations about consumption of diverse diets and/or of food items from specific sets of food groups[9]. National FBDG are developed through a structured process and are meant to shape policy and national programmes (Albert, 2007).

There is no global harmonisation of FBDG[10], and the MDD-W threshold of at least five of ten food groups may not align exactly with national recommendations. The indicator should not be confused with a dietary guideline, nor should it be used as a basis to inform the development of guidelines or programmatic behaviour change communication or counselling messages.

However, although the MDD-W food groups may not align perfectly with those recommended for consumption in national FBDG, all such guidelines do advocate consumption of diverse food groups. Thus, measurement of this dimension of diet quality, with an aim to assess and advocate for improvement, is consistent with the principles behind dietary guidance given at country level. Also, in many cases, the food groups on the MDD-W questionnaire could be aggregated during analysis to reflect food groups in national FBDG and could provide information on consumption of these groups in addition to the prevalence of meeting the MDD-W threshold.

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8 Seasonality is important because the relationship between food group diversity and micronutrient intakes and adequacy can vary by season. See Appendix 1 for a discussion of seasonality and of other considerations for survey design and sampling.

9 FAO compiles national FBDG, which are available at http://www.fao.org/nutrition/nutrition-education/food-dietary-guidelines/en/.

10 However, development of global guidance has been recommended in the Conference Outcome Document: *Framework for Action of the Second International Conference on Nutrition Rome 19–21 November 2014.* ("Recommendation 13: Develop, adopt and adapt, where appropriate, international guidelines on healthy diets", p. 3).

The advantage of using an indicator such as MDD-W rather than a measure tailored to an individual country's FBDG is the ability to compare across time and location, and even in the event that national FBDG change.

Comparison with other food group diversity indicators

Dietary diversity has been measured in many different ways, in both research and programmatic contexts. However, only a few simple food group diversity indicators have been promoted for wide population-level use in resource-poor settings. These include the Household Dietary Diversity Score (HDDS), the MDD and the Women's Dietary Diversity Score (WDDS), which are compared with the MDD-W in **Table 1**.

The WDDS resulted from a preliminary step in the process of developing the dichotomous MDD-W. Earlier research resulted in a suggestion of several scores that reflected micronutrient adequacy; however, no single score was proposed for global use (Arimond et al., 2010). One of these scores, a WDDS based on nine food groups, was described by FAO (2011) and selected for use by the U.S. Agency for International Development (USAID) Feed the Future and Food for Peace development food assistance programmes, and others. However, demand for a dichotomous indicator grew, particularly for use in policy and advocacy contexts. Another round of research with more data sets replicated and extended the earlier study and resulted in the proposal of the MDD-W, a dichotomous indicator based on a set of ten food groups (Martin-Prével et al., 2015).

In addition to the simple food group indicators in Table 1, a variety of more complex indicators and indices have been used in specific countries or contexts. For example, the World Food Programme (WFP) uses a more complex food group diversity indicator (the Food Consumption Score [FCS]) in the context of food security analyses. The FCS is a weighted household-level food group score that also incorporates frequency of consumption over 7 days (WFP, 2008).

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), which is one dimension of household food security Reflects economic access to a diet with higher kilocalories per capita	Proxy for the adequacy of the micronutrient density of infant and young child diets Reflects one of several favourable infant and young child feeding practices	Proxy for the probability of micronutrient adequacy of women's diets Reflects micronutrient adequacy, which is one critical dimension of diet quality	Proxy for the probability of micronutrient adequacy of women's diets Reflects micronutrient adequacy, which is one critical dimension of diet quality
Number of food groups	12	7	9	10[e]
Threshold for dichotomous indicator	No dichotomous indicator	4 or more of the 7 food groups	No dichotomous indicator	5 or more of the 10 food groups
Indicator tabulation includes fats/oils, sweets, and all beverages, including alcohol	Yes	No	No	No
Foods consumed outside the home	Not included	Included	Included	Included

[a] HDDS = Household Dietary Diversity Score; see http://www.fantaproject.org/monitoring-and-evaluation/household-dietary-diversity-score and Food and Agriculture Organization of the United Nations (FAO) (2011).

[b] IYCF MDD = Minimum Dietary Diversity indicator, as an indicator of infant and young child feeding practices; see http://www.who.int/maternal_child_adolescent/documents/9789241596664/en/.

[c] WDDS = Women's Dietary Diversity Score; see FAO (2011).

[d] MDD-W = Minimum Dietary Diversity for Women of Reproductive Age

[e] During analytic work comparing candidate indicators to micronutrient adequacy for women, the 7-group IYCF MDD and dichotomous indicators based on the 9 groups in the WDDS were explored but did not perform as well as the 10-group MDD-W (Martin-Prével et al., 2015).

Methodological approaches to measurement of food group diversity

While food group diversity indicators can be derived from detailed quantitative dietary intake surveys, this guide is intended for users who are not in a position to conduct such surveys. When relatively simple data collection approaches are required, as in a number of large-scale and multi-module surveys, food group diversity indicators can be measured using two main methods: open recall and list-based.

OPEN RECALL METHOD

In a qualitative open 24-hour recall (henceforth, "open recall"), the enumerator asks a series of standard probing questions to help the respondent recall all foods and beverages consumed the previous day and night and also probes for main ingredients in mixed dishes. Specifically, the recall period covers from when the respondent awoke the previous day, through the day and night for a 24-hour period.

The recall is "open" because **the enumerator does not read predefined foods/groups to the respondent**. Each food or beverage that the respondent mentions can be circled, underlined or ticked on a predefined list. Foods not already included on the predefined list can be either classified by the enumerator into an existing predefined food group or recorded in a separate place on the questionnaire and coded later into one of the predefined food groups.

This method is recommended and is detailed in **Section 3** (model questionnaire).

LIST-BASED METHOD

In the list-based method, **the enumerator does read a list of foods and beverages to the respondent**. The enumerator informs respondents that they should respond "yes" for each food or beverage consumed during the specified recall period of the previous day and night. The enumerator continues by reading a list of foods organized in groups, giving multiple examples for each food group.

There is anecdotal evidence that data collected with this method are less complete. An example questionnaire and more details are given in **Appendix 3**.

COMPARISON OF METHODS

There are advantages and disadvantages to each method; these are detailed in **Table 2**. This guide describes and recommends the open recall because it may lead to more accurate and complete recall of all foods and beverages consumed.

Of key concern are the linked issues of respondent burden and the time needed (and thus cost) to implement the recall. There is no universal answer regarding which method is quicker, because it depends on the simplicity or complexity of the woman's diet, on the length of the food group list[11] and on the number of examples needed for each food group on a list-based questionnaire. When diets are simple, the open recall is likely to be the quicker of the two.

[11] See Section 2 for an explanation of required and optional food and beverages categories (rows) for the MDD-W questionnaire.

Table 2. Advantages and disadvantages of two recall methods

	Open recall method	List-based method
Advantages	• Intuitive for both the enumerator and the respondent • Structured probing • Enumerator (rather than respondent) has the task of matching foods consumed with food groups and examples listed in questionnaire, leading to more correct classification of foods • May lead to more complete recall of foods	• Possibly lower capacity requirements for enumerators • Shorter training time for enumerators • Easier to programme in Computer-Assisted Personal Interviewing (CAPI) applications[a]
Disadvantages	• Longer training time required • Requires enumerators to have a good understanding of the objectives of the questionnaire and reasonable knowledge of foods as acquired, prepared and consumed in the survey area(s) • More difficult to programme in Computer-Assisted Personal Interviewing (CAPI) applications[a]	• Requires the respondent to correctly identify foods she consumed as belonging to food groups with examples as read from the list, which may result in misclassification of foods into food groups • Requires the respondent to mentally "take apart" mixed dishes and to remember to respond for each main ingredient • Requires the respondent to mentally move back and forth in time as foods are mentioned • May be more likely to elicit biased responses, for example, if respondents aim to please the enumerator (by saying "yes") or give untrue positive responses for high-status foods, such as meat • May be more likely to lead to omission of foods consumed, because there is no probing at the level of the eating episode • May lead to different results when the number of food groups/food examples in the list differs (e.g. from previous surveys or surveys in other areas) • Anecdotally reported to be more tedious for respondents and enumerators, particularly when food group lists are long

[a] CAPI applications allow direct data entry (no paper forms).

Section 2. Description of food groups

As noted in Section 1, MDD-W is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day or night. This section provides a description of each of the ten MDD-W food groups:

1. Grains, white roots and tubers, and plantains
2. Pulses (beans, peas and lentils)
3. Nuts and seeds
4. Dairy
5. Meat, poultry and fish
6. Eggs
7. Dark green leafy vegetables
8. Other vitamin A-rich fruits and vegetables
9. Other vegetables
10. Other fruits

The food groups that make up the MDD-W are mutually exclusive – that is, no food or ingredient is placed in more than one food group. Note that on the model questionnaire (see **Section 3**), three of the ten groups are further subdivided. This is for ease of recording and to make the questionnaire more intuitive for enumerators. For example, the food group "Meat, poultry and fish" is recorded on three rows (subgroups) on the questionnaire.

In addition, this section provides descriptions of six optional and two required categories[12] (pages 17–19) that appear on the model questionnaire (Section 3) but that are not part of the indicator calculation.

The optional categories are:

- Insects and other small protein foods
- Red palm oil
- Other oils and fats
- Savoury and fried snacks
- Sweets
- Sugar-sweetened beverages

The required categories are:

- Condiments and seasonings
- Other beverages and foods

The rationale for including both the optional and required categories is stated in the descriptions below. Some of these categories are of interest in the context of the nutrition transition while other categories are included primarily to provide a place for enumerators to mark each food and to avoid falsely classifying items into one of the ten MDD-W groups. The "Condiments and seasonings" category contains diverse foods and ingredients and is designed to avoid allowing foods consumed in very small quantities to "count" in the MDD-W indicator. See **Box 1** on page 13 for further discussion of "how much is enough to count?" and of the "Condiments and seasonings" category.

[12] These are referred to as "categories" rather than "groups" to avoid confusion with the MDD-W food groups. However, these, too, consist of lists of food or beverage items.

In addition to the descriptions in this section, detailed lists of foods belonging in each MDD-W food group, as well as in the other categories, are provided in **Appendix 2**. Appendix 2 also includes a table listing specific foods and ingredients that are difficult to classify.

A discussion of mixed dishes is provided at the end of this section.

Fortified foods and products

The MDD-W reflects healthy diversity in unfortified foods and is neither designed nor adequate for assessing coverage or impact of fortification or biofortification programmes. Separate questions on consumption of fortified foods and/or biofortified foods may be added to the questionnaire. These will be context-specific and are not described in this guide. Such questions could also assess coverage of specialised products, such as blended fortified foods (corn-soy blend, wheat-soy blend, etc.) or ready-to-use foods.

Guidance is available elsewhere on monitoring and evaluation of fortification programmes (e.g. WHO/FAO, 2006). Whether or not optional questions are developed and added to the model questionnaire, for the purposes of MDD-W, fortified and biofortified foods should be classified in their food group "home" (e.g. fortified wheat flour should be classified as a grain).

Selection of the ten food groups for MDD-W

Dietary diversity indicators group foods together when they are considered nutritionally similar and/or play the same role in the diet (Ruel, 2003). While developing the MDD-W, many different candidate indicators, with different numbers of food groups and different food group definitions, were considered. The indicator based on the ten groups described here had a stronger relationship to micronutrient adequacy than other candidate indicators with different groupings (Martin-Prével et al., 2015).

Food group descriptions

Note that the food groups described here generally follow culinary, rather than botanical, definitions and classifications for such items as fruits, vegetables and seeds. For example, tomatoes and peppers are classified as vegetables rather than fruits, and the "Nuts and seeds" group includes only certain types of seeds that are typically described as such in one or many cuisines (e.g. sesame seeds or pumpkin/squash seeds).

GROUP 1 – GRAINS, WHITE ROOTS AND TUBERS, AND PLANTAINS

This group is sometimes also called "starchy staples". These foods provide energy, varying amounts of micronutrients (e.g. certain B vitamins provided by grains) and varying amounts of anti-nutrients, such as phytates[13]. Note that white-fleshed plantains (a fruit) are included in this group because they share a similar nutrient profile to some roots and tubers and play the same role in diets as a "starchy staple" food.

Common examples from this group include all types of breads and flatbreads, stiff porridges of maize, sorghum, millet or cassava (manioc), pasta, potatoes, white-fleshed sweet potatoes, white yams, yucca and plantains.

[13] Phytates are considered "anti-nutrients" because they bind with certain minerals and prevent absorption.

GROUP 2 – PULSES (BEANS, PEAS AND LENTILS)

This group includes members of the plant family *Fabaceae* (alternate name *Leguminoseae*), such as beans, peas and lentils. The seeds are harvested at maturity and dried and used as food or processed into a variety of food products. This group does not include the same plants harvested green or immature and eaten fresh in the pod – these are included in the "Other vegetables" group. It also does not include groundnut (peanut) because while groundnut is in the *Fabaceae* family, both its high fat content and most common culinary uses are different from other legumes and similar to those of tree nuts. The pulses group **does** include mature seeds (beans) and processed products, such as tofu, tempeh and other soy products. The group is high in protein and B vitamins, although the protein is not "complete" and certain amino acids must be supplied by other foods. Pulses represent a very important protein source in plant-based diets and among populations where animal-source foods are largely unaffordable. Fat content of pulses is generally low, with the exception of soybean. Pulses contain varying amounts of anti-nutrients that inhibit absorption of certain nutrients.

Common examples from this group include common bean (black, kidney, pinto), broad bean (fava, field bean), chickpea (garbanzo), pigeon pea, cowpea, lentil and soybean/soybean products or other legume products.

GROUP 3 – NUTS AND SEEDS[14]

This group comprises mostly tree nuts but also includes groundnut (peanut) and may include certain seeds when consumed in substantial quantities. While seeds are usually recorded in the "Condiments and seasonings" category (below), they are included in the nuts/seeds category if they are a substantial ingredient in local mixed dishes or if they are eaten as a substantial snack or side dish. This group also includes nut and seed "butters", such as pounded groundnut/peanut butter, cashew butter or sesame butter (tahini), when consumed in substantial amounts and not merely added to flavour mixed dishes. See "Condiments and seasonings" (below) and **Box 1** for more detailed discussion of when to include particular nuts and seeds in this food group. Note that oils extracted from nuts and seeds are **not** included in this group.

Nuts and certain seeds are rich in unsaturated fatty acids, vegetable protein, fibre, minerals, tocopherols, phytosterols and phenolic compounds. They may have unique health benefits (Alasalvar and Bolling, 2015; Del Gobbo et al., 2015; Ros, 2015). With the exception of chestnuts, they generally have a very high fat content.

Common tropical tree nuts include cashew, macadamia and Brazil nut; common nuts grown in more temperate zones include almond, chestnut, hazelnut, pecan, pistachio and walnut. Peanut/groundnut cultivars are grown in a wide range of climates. Commonly consumed seeds include sesame, sunflower, pumpkin/squash/gourd and pine nut (see **Appendix 2**).

[14] "Seeds" in the botanical sense includes a very broad range of items, including grains and pulses. However, in culinary systems, there is usually a limited number of other seeds, typically high in fat content and consumed as snacks or side dishes, in pastes or to season mixed dishes. For purposes of this grouping, "seeds" excludes grains and pulses. The group also excludes seeds when they are added in small amount to flavour dishes (see Box 1). Examples of seeds that may be eaten in larger amounts include squash/melon/gourd seeds used as a main ingredient in West African stews and sesame seed paste (tahini) in some dishes in Middle Eastern cuisines.

GROUP 4 – DAIRY

Dairy foods are easily understood as a group and are important sources of high-quality protein, potassium and calcium, as well as vitamin B12 (available only from animal-source foods) and other micronutrients. This group includes almost all liquid and solid dairy products from cows, goats, buffalo, sheep or camels. Tinned, powdered or ultra-high temperature (UHT) milk, soft and hard cheeses and yoghurt and kefir are also included.

However, butter, cream and sour cream, ice cream, sweetened condensed milk and processed/packaged "yoghurt drinks" are excluded. Butter, cream and sour cream are classified with fats and oils because of their high fat content and most typical culinary uses. Ice cream and sweetened condensed milk are classified with sweets. Commercially processed/packaged "yoghurt drinks" are classified with sweet drinks, because these are usually high in sugar and low in dairy content. While high-quality ice cream and yoghurt drinks can contain substantial amounts of dairy and associated nutrients, cheaper and poorer-quality products do not, and the classification is aimed to avoid false inflation of the proportion of women consuming nutritious dairy products.

GROUP 5 – MEAT, POULTRY AND FISH

This group is sometimes referred to as "flesh foods". All meats, organ meats, poultry and other birds and fresh and dried fish and seafood/shellfish are included. Wild birds and mammals ("bush meat"), snakes, frogs and other reptiles and amphibians are also included. On the questionnaire, these appear as three subgroups: organ meat, meat and poultry, and fish/seafood. All flesh foods are important sources of high-quality protein and bioavailable micronutrients, notably iron, zinc and vitamin B12 (the last is available only from animal-source foods).

There is increasing interest in and concern regarding consumption of red meat and processed meats (see, for example, Bouvard et al., 2015, and http://www.who.int/features/qa/cancer-red-meat/en/). In some settings, consumption of animal-source foods is very low, while in others it is consumed in excess of needs.

For the purposes of the MDD-W indicator, all flesh foods, including red meat and processed meat, are included in this group. However, in settings where there are public health concerns about excessive consumption and/or where processed meats are widely consumed, an additional row could be added to the questionnaire to disaggregate and capture descriptive information about specific types of meat of concern, i.e. to separate red meat and/or processed meat from other items. For global comparability, however, these items should still "count" in MDD-W in the same way as poultry or fish.

GROUP 6 – EGGS

This group includes eggs from any type of bird (domesticated poultry and wild birds) but not fish roe, which are classified with small protein foods (see "Insects and other small protein foods", p. 17). Like other animal-source foods, eggs are a good source of protein, vitamin B12 and a range of bioavailable micronutrients.

Box 1. The issue of quantity – how much is enough to "count" towards food group diversity?

Ideally, women of reproductive age (WRA) would consume adequate amounts of diverse foods, such as fruits, vegetables, legumes, nuts and animal-source foods. But what is "adequate"? Various national food-based dietary guidelines provide recommendations on serving sizes and number of servings to consume from various food groups. However, there is no global harmonisation of what constitutes a serving size or on recommended numbers of servings per day for the various food groups.

Furthermore, Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) was developed exactly for situations where collection of quantitative dietary information is not feasible, that is, where it is not feasible to ask about the number and size of servings consumed.

So, how much is needed for a food group to "count" in the MDD-W? And how can this be determined without asking about quantities?

Several studies suggest that even if it is not possible to assess servings or an "adequate" amount, it is worthwhile to try to exclude very small quantities (Arimond et al., 2010; Gewa et al., 2014; Martin-Prével et al., 2015). The relationship between food group diversity and micronutrient adequacy is stronger when very small amounts of a food group are not allowed to "count". Several studies have used a cutoff of ≥15 g (for many foods that is about one tablespoon). So for the purposes of defining "large-enough" quantities, consider if, when consumed, the food is **usually** consumed by WRA in quantities ≥15 g.

Experience with large dietary diversity surveys has shown that it is both feasible and best to define foods and ingredients that do and do not count for constructing the MDD-W indicator during questionnaire adaptation – that is, before enumerator training and data collection begin. Foods usually consumed in trivial quantities are placed in the "Condiments and seasonings" category. Enumerators should know the principle of not counting small quantities but **should not** be making decisions during data collection about whether or not a quantity is sufficient to count.

When surveys will be repeated in the same geographic area across time, it is essential to maintain the same definitions of foods that do and do not count across survey rounds. It is also useful to aim for consistency among various users in the same geographic area and to follow the same principles and process across different countries or geographic areas. To promote consistency, this manual therefore provides a principle, suggestions for the adaptation process (**Section 4**) and examples (**Appendix 2**).

- **Principle:** When necessary, err on the side of **not** falsely inflating food group diversity. This is particularly important when foods or ingredients are expensive and the poorest and most vulnerable women are those most likely to consume trivial amounts.
- **Process:** Engage nutrition experts in questionnaire adaptation. When this is not feasible, follow the classification decisions in this manual (**Appendix 2**) for classifying items into the "Condiments and seasonings" category.

Box 1. *continued*

Condiments and seasonings

Condiments and seasonings are food ingredients that are either usually or often used in small quantities in the "family pot" or in foods prepared outside the home. Often these food items are added to provide flavour. Common examples include all fresh or dried herbs, spices, chili peppers, garlic, ginger root, fish powder, bean paste, fermented bean paste, tomato paste, seeds added for flavouring, bouillon cubes and similar flavour cubes, soy sauce, fish sauce and pepper sauce (see also **Appendix 2**). Some of these are very nutritious but **the amount consumed by individuals consuming the dish is most often very small**. Furthermore, in cases where these ingredients are expensive, the quantities added in poorer households may be smaller than in better-off households.

In the MDD-W method described in this manual, these items are placed in the "Condiments and seasonings" category and do not count in the ten food groups that comprise MDD-W (see **Section 6** on tabulation of the indicator). This reflects a judgement that the risk of falsely inflating food group diversity is more serious than the risk of excluding these items and underestimating diversity for the relatively small number of instances where consumption of these items might be more substantial.

During survey adaptation (**Section 4**), survey designers can decide if there are culturally specific exceptions to this – for example, if there are situations where seeds or seed pastes are **usually** eaten in large quantities. In some settings, there may be additional context- and cuisine-specific items that are usually used in trivial amounts and should be excluded from the count by placing them in the "Condiments and seasonings" category (e.g. small amounts of nuts, legumes or grated vegetables if **usually** used to top dishes). These items can also be added to the "Condiments and seasonings" category at the discretion of nutrition experts involved in survey adaptation.

These types of decisions should be taken only in consultation with experts; when this is not possible, follow the classification decisions suggested in this manual.

GROUP 7 – DARK GREEN LEAFY VEGETABLES

Essentially all medium-to-dark green leafy vegetables are vitamin A-rich (see **Box 2** for criteria for classifying items as vitamin A-rich). Only very light leaves, such as iceberg lettuce, are not. Medium green leaves, such as Chinese cabbage, romaine and bibb lettuce, along with darker greens, are all vitamin A-rich and are included in this group. In addition to being rich in vitamin A, many green leafy vegetables are rich in folate and several other micronutrients.

Commonly consumed leaves vary widely by country and region, and include many wild and foraged species, as well as the green leaves of other food crops (e.g. cassava leaves, bean leaves, pumpkin leaves, amaranth leaves and others). See **Appendix 2** for a detailed list of cultivated leafy vegetables. In the absence of information on nutrient content, wild/foraged leaves that are medium-to-dark green can be assumed to be vitamin A-rich and placed in this group.

Box 2. Criteria for defining foods and liquids as "sources" of vitamin A

For plant foods: Foods providing at least 120 retinol equivalents (RE) per 100 g are considered "sources" of vitamin A.* This is roughly equivalent to 60 retinol activity equivalents (RAE). Food composition tables may report vitamin A content of foods using the older RE units or the more recently adopted RAE.

For liquids (e.g. juices): Liquids providing 60 RE or 30 RAE per 100 g are considered to be sources of vitamin A.

*120 RE per 100 g corresponds to 15 percent of the Nutrient Reference Value (NRV; 800 RE) established by the Codex Alimentarius. The Codex standard for identifying a food as a "source" of any nutrient states that the food should provide any of the following: 15 percent per 100 g solid food, 7.5 percent per 100 g liquids, 5 percent per 100 kcal or 15 percent per serving. To be identified as a "high source", the food must provide twice this amount (e.g. 30 percent or 240 RE per 100 g solid food). The NRVs are set at a level that should meet the needs of approximately 97 percent of individuals in the age/sex group with highest needs (excluding pregnant and lactating women). For the definition of "source", see Codex Alimentarius Commission, Guidelines adopted 1997, revised 2004. For the definition of NRV, see Codex Alimentarius Commission, Guidelines adopted 1985, revised 1993 (for all Codex Standards, see http://www.codexalimentarius.org/).

GROUP 8 – OTHER VITAMIN A-RICH FRUITS AND VEGETABLES

This group includes both vitamin A-rich fruits and a small but diverse group of vitamin A-rich vegetables other than leafy greens. These foods may also be good sources of vitamin C and/or folate and/or other micronutrients. While "Other vitamin A-rich fruits and vegetables" constitutes one of the ten distinct food groups in the indicator, fruits are listed separately from vegetables on the questionnaire, as this may be more intuitive for enumerators.

The most common vitamin A-rich fruits are ripe mango and ripe papaya; others include red palm fruit/pulp, passion fruit, apricot and several types of melon. When eaten "green" (unripe), mango and papaya are **not** rich in vitamin A and if consumed "green" should be classified with "Other fruits".

Certain varieties of ripe, deep yellow-fleshed or orange-fleshed bananas are also rich in vitamin A, but white/cream-fleshed bananas are not. Deep yellow-fleshed and orange-fleshed bananas may be classified with vitamin A-rich fruits when their high vitamin A content is known to survey planners **and** it is considered feasible to distinguish bananas by colour during fieldwork. Otherwise, all bananas should be classified with "Other fruits" (see below), to avoid falsely inflating the proportion of women consuming vitamin A-rich fruits and vegetables.

Other vitamin A-rich vegetables include orange-fleshed sweet potato, carrot, pumpkin and deep yellow- or orange-fleshed squash. See **Appendix 2** for a list of other vitamin A-rich fruits and vegetables.

GROUP 9 – OTHER VEGETABLES

This group includes vegetables not counted above as dark green leafy vegetables or as other vitamin A-rich vegetables. Diets rich in fruits and vegetables are associated with positive health outcomes. This may be due to consumption of a range of bioactive compounds found in fruits and vegetables, including phenolics, flavonoids and fibre, and not just to their commonly recognised role as sources of micronutrients (Liu, 2013; Turati et al., 2015).

This group includes legumes when the fresh/green pod is consumed (as in fresh peas, snow peas, snap peas or green beans). In general, the "Other vegetables" group follows the culinary definition of a vegetable, not the botanical definition. It includes stems, fruits and flowers of plants when generally consumed in savoury dishes and considered as vegetables in culinary systems. So, for example, cucumber, tomato and okra (all fruits in botanical terms) are included as "Other vegetables".

However, this group excludes high-carbohydrate "starchy" roots and tubers, such as white potatoes, white yams, cassava and cocoyam, because their nutrient contributions differ, even though they are considered vegetables in some culinary definitions. Exclusion of roots and tubers is consistent with how WHO documents define which vegetables count towards the recommended consumption of fruits and vegetables[15].

As with dark green leafy vegetables, commonly consumed vegetables vary widely with geography and can include foraged as well as cultivated foods.

[15] For example, see the Healthy Diet Fact Sheet at http://www.who.int/mediacentre/factsheets/fs394/en/, accessed July 1, 2015, and Agudo, 2005.

GROUP 10 – OTHER FRUITS

This group includes most fruits, excluding vitamin A-rich fruits. Health effects of diets rich in fruits and vegetables were noted above. As with "Other vegetables", this group follows the culinary definition of fruits and so does not include tomatoes, etc., as explained above. Fruits are usually easily recognised and classified as such. Note that plantains are classified with starchy staples (Group 1, above), but sweet white bananas are classified with fruit.

As with vegetables, commonly consumed fruits vary widely with geography and can include foraged as well as cultivated fruits. A detailed list is provided in **Appendix 2**.

OTHER FOOD CATEGORIES

The food categories listed below do not count in the construction of the MDD-W indicator.

Insects and small protein foods – optional

This category includes insects, insect larvae/grubs, insect eggs, fish roe, spiders, land and sea snails and any other small invertebrates. It does not include frogs, snakes or other reptiles and amphibians, which are included in the "Meat, poultry and fish" group.

Insects and other small protein foods are diverse and have diverse nutrient content. Considering insects alone, it is estimated that there are more than 2,000 edible species, but nutrient data are available for only about 10 percent of these (Rumpold and Schlüter, 2013). Data on quantities consumed are also scant. For those species with nutrient composition data, it appears insects are nutrient dense and could potentially provide protein, fatty acids and micronutrients. But information on bioavailability is also lacking. Given these uncertainties, insects and other small protein foods are not included in the MDD-W count (this is also in harmony with the IYCF MDD indicator). As with condiments and several other items above, it is judged better to err on the side of not including/not counting these small protein foods given the diversity in nutrient content and uncertainty about the amount usually consumed. This avoids the risk of falsely inflating the proportion of women reported to consume nutrient-dense animal-source foods.

Reasons for including this category on the questionnaire: the category includes highly nutritious foods, and there may be an interest in knowing the proportion of WRA who are consuming these foods. These foods are also being promoted to play a greater role in the future in filling nutrient gaps (FAO, 2013).

If these foods are not eaten or are considered very rare throughout the survey area, this category does not need to be included on the questionnaire.

Red palm oil – optional

This category includes only red palm oil, which is usually consumed as an ingredient in mixed dishes.

Reason for including this category on the questionnaire: red palm oil is extremely high in vitamin A. In geographic areas where it is available, it may be of interest to know the proportion of WRA consuming it. Note that the oily red palm fruit is classified as a vitamin A-rich fruit. In areas where grown, either the oil or the oily fruit may be consumed, depending on the particular mixed dish.

If red palm oil is not available, not consumed or considered very rare throughout the survey area, this category does not need to be included on the questionnaire.

Other oils and fats – optional, but recommended

This category includes all other solid and liquid oils and fats, including those of plant or animal origin. Examples are lard, suet (tallow) and butter (solid animal fats); margarine and "shortening" (hydrogenated vegetable oil); and a range of oils extracted from nuts, seeds and grains. This category also includes very high-fat dairy items, such as cream and sour cream.

Note that it is usually not feasible to capture information on the quality and type of fats and oils consumed in the context of simple food group recall surveys. In many contexts, labelling is insufficient and/or oils are locally produced, unlabelled or repackaged into unlabelled containers or sachets. Respondents often will not know the type of oil consumed.

Reasons for including this category on the questionnaire: to estimate the proportion of women consuming any fats/oils, particularly in very high poverty areas where fat consumption is considered too low, and to give enumerators some place to mark when these are mentioned as ingredients in mixed dishes.

Savoury and fried snacks – optional

This category includes different foods in different settings, but in many settings crisps, chips, puffs and other low-cost and nutrient-poor snack foods are increasingly common. This category also includes other, more-substantial fried snacks, such as doughnuts/fried dough, samosas and other deep fried snacks and "street food" snacks. These foods may include very small amounts of meat or vegetables but are mainly fat and simple carbohydrate and may often be high in sodium as well.

Note that other fried foods – for example, fried potatoes and fried plantains – which may be consumed as meals or snacks are classified with roots and tubers because in some settings potatoes or plantains are staple foods, and classifying them with snacks might mean there would be no staple food in the count. This could result in a false "deflation" of food group diversity. Depending on their role in local diets, survey objectives and the likelihood of this false deflation, survey designers could choose to classify fried potatoes, fried plantains and similar in the "Savoury and fried snacks" category.

Reasons for including this category on questionnaires: to begin to provide descriptive information on the proportion of WRA consuming snacks that are generally nutrient-poor and energy-dense, and also to provide a place to mark these foods.

Sweets – optional

This category includes sweet foods, such as candy, chocolates, cakes, sweet biscuits/cookies, sweet pastries and ice cream.

Reasons for including this category on the questionnaire are the same as for savoury and fried snacks.

Sugar-sweetened beverages – optional

This category includes all sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks (including those made with powders), sweet tea or coffee with sugar. It also includes fortified sweet drinks, malt drinks and "energy drinks", which are popular in some places.

Reasons for including this category on the questionnaire are the same as for savoury snacks and sweets. In addition, sugar-sweetened beverages have been associated with health risk factors in a number of studies and meta-analyses (Malik et al., 2013; Xi et al., 2015), and there is increasing interest in documenting prevalence of consumption.

Condiments and seasonings – REQUIRED

This category includes all minor ingredients in mixed dishes, which primarily provide flavour and would be consumed in very small amounts in any individual serving of the dish. It includes items added at any stage of cooking or when serving food (e.g. garnishes sprinkled on top of a dish to add flavour or visual appeal). This category includes fresh or dried herbs, spices, chili peppers, ginger root, garlic, fish powder, bean paste, fermented bean paste, tomato paste and seeds added for flavour or to garnish mixed dishes. It also includes bouillon cubes, "Maggi cubes" and similar items, soy sauce, fish sauce and pepper sauce. It includes sugar when sugar is added as a flavouring to mixed dishes or side dishes.

Note that many of these items that are added to flavour dishes may be nutritious and could be promoted as nutrient-rich additions to the family meal. But the amounts consumed are typically small and do not contribute substantially to micronutrient adequacy. Several studies have shown that exclusion of foods eaten in very small quantities strengthens the association between food group diversity and micronutrient adequacy (Arimond et al. 2010; Gewa et al., 2014; Martin-Prével et al., 2015). Therefore, these items are placed in the "Condiments and seasonings" category to avoid a false inflation of women's dietary diversity. See **Box 1** for further discussion of exclusion of small quantities.

The reason for including this category on the questionnaire is primarily to give a place for enumerators to mark these foods to avoid falsely classifying elsewhere. See **Section 5** for a discussion of training enumerators regarding this food category and see **Appendix 2** for more examples.

Other beverages and foods – REQUIRED

This category includes beverages, such as unsweetened tea, unsweetened coffee, clear broth, herbal infusions and alcohol, and miscellaneous foods, such as pickles and olives.

In addition and optionally, a space can be left where enumerators can write down other recalled foods if they are uncertain where to classify the item on the questionnaire. If it will not be possible for supervisors to review forms with enumerators on an ongoing basis (as in many large-scale surveys), having enumerators write in "other" foods is not advised. In surveys with smaller sample sizes, allowing use of this space can contribute to ongoing enumerator training and data quality control, especially if there is timely review by supervisors and feedback to the enumerator.

The reason for including this category on the questionnaire is primarily to give a place for enumerators to mark these foods to avoid falsely classifying elsewhere.

Mixed dishes and food items with multiple ingredients

Mixed dishes and food items with multiple ingredients present the most difficult challenge to implementation of food group recall surveys. It is not possible to provide comprehensive lists for classification. This guide aims to provide principles and some examples to aid in questionnaire adaptation and in training enumerators to record information about these dishes and food items.

One principle underlying many of the difficult choices reflected in the content of this guide is to **err on the side of NOT falsely inflating food group diversity**. This is particularly important when foods or ingredients are expensive and the poorest and most vulnerable women are more likely to consume trivial amounts.

The principle is applied to two distinct but related situations. The first involves "taking apart" mixed dishes and deciding which ingredients should be classified so that they can count in the MDD-W and which should be classified with "Condiments and seasonings". These are decisions that need to

be made at the level of adapting the questionnaire with local foods. Enumerator instructions and training must also include clear guidance on probing for details of mixed dishes and on recording ingredients in their respective food groups and categories, including into the "Condiments and seasonings" category.

The second situation involves items that are known to contain multiple ingredients but should nevertheless be classified as a single food for purposes of the survey (e.g. bread). These should be categorised into a single food group or category during questionnaire adaptation and reviewed during enumerator training.

MIXED DISHES

Mixed dishes may contain some ingredients in large quantities ("main ingredients") and others in smaller quantities to add flavour. The principle stated above (and also in **Box 1**) presents a rationale for excluding items likely to be consumed in very small quantities from counting in the MDD-W. Box 1 also provides an argument for consistency across surveys. To support consistency, this guide provides a list of items that should not count and should instead be classified as "Condiments and seasonings", as described above on page 19 and as listed in **Appendix 2**.

Survey designers can still choose to make different decisions, but they should do so only when they have access to nutrition experts with very good understanding of the principles of food group recalls and of variability in preparation of mixed dishes across the range of households in the survey. In addition, survey designers should realize that if different decisions are made for surveys in the same geographic area, survey results will not be comparable.

See **Box 3** for some examples of classification for the following types of mixed dishes:

- Thin soups
- Thick soups, stews and curries
- Dark green leafy vegetables and other vegetable dishes
- Sandwiches

Box 3. Mixed dishes – Examples for classifying ingredients into rows on the model questionnaire

In the examples below, groups that "count" for Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) are in **bold font and underlined**.

Thin and thick soups, stews and curries can all be served alone or served alongside or on top of a staple food. When relevant, enumerators should probe to determine which parts of the dish were consumed.

THIN SOUPS can include any combination of meat, fish, vegetables and seasonings boiled in liquid and may or may not include oil. Thin soups have a high water content, and individual ingredients can often be easily picked out and consumed or not consumed by individuals.

EXAMPLE OF THIN SOUP: CHICKEN SOUP – THIN BROTH [Respondent reports the soup contained chicken, water, onion, garlic and herbs]

Respondent reports she consumed:	the broth only	Mark under "Condiments and seasonings" (for the garlic and herbs) and "Other beverages and foods" (for the broth).
	all parts of the soup	Mark under the two groups above and also mark "**Meat and poultry**" (for the chicken) and "**Other vegetables**" (for the onion).

THICK SOUPS AND STEWS have the same types of ingredients as thin soups but are served with thicker consistency because of long, slow cooking and sometimes as a result of adding thickeners (starch). In thick stews, there may be little or no broth. In thinner stews, some items are dissolved in the broth, but it may still be possible to pick out some items, particularly when meat is included.

EXAMPLE OF THICK SOUP OR STEW: KIDNEY BEAN STEW

Respondent reports the stew contained kidney beans, water, oil, garlic and spices.	Mark under "**Pulses (beans, peas and lentils)**" (for the kidney beans), "Condiments and seasonings" (for the garlic and spices) and "Other oils and fats" (for the oil).

CURRIES are similar to stews and can contain meat, fish or vegetables. Curries are usually characterised by use of many spices and seasonings.

EXAMPLE OF A CURRY: EGGPLANT AND ONION CURRY

Respondent reports the curry contained eggplants, onions, tomatoes, garlic, ginger, chilies, cumin seed, coriander seed and cilantro (coriander leaf).	Mark under "**Other vegetables**" (for the eggplants, onions and tomatoes) and "Condiments and seasonings" (for the garlic, ginger, chilies, cumin seed, coriander seed and cilantro).

DARK GREEN LEAFY VEGETABLES ("GREENS") AND OTHER VEGETABLES can be included in soups, stews or curries, or they can be the main ingredient in dishes. In many cuisines, dishes where vegetables are the main ingredient contain no other ingredients or only very small amounts of other ingredients.

EXAMPLE OF A VEGETABLE DISH: CASSAVA LEAVES WITH FISH POWDER

Respondent reports the dish was made with pounded cassava leaves, water, salt and fish powder.	Mark under "**Dark green leafy vegetables**" (for the cassava leaves) and "Condiments and seasonings" (for the salt and the fish powder).

SANDWICHES are mixed dishes with meat, cheese, vegetables and/or spreads served on bread, with or without toppings or condiments that are added mainly for flavour.

Respondent reports she had a cheese sandwich with mustard.	Mark under "**Grains, white roots and tubers, and plantains**" (for the bread), "**Dairy**" (for the cheese) and "Condiments and seasonings" (for the mustard).

Food items with multiple ingredients

Some food items present a situation exactly opposite that of mixed dishes. These are items that typically have more than one ingredient, but that are usually dominated by one ingredient. For these items, it is not necessary to probe for ingredients, as the item can be classified into one food group or category based on the main ingredient. See **Box 4** for a list of examples of these items. This list is not exhaustive but aims to provide sufficient information so that survey designers can identify similar local items that should be treated in the same way.

Box 4. Food items with multiple ingredients

Certain food items with multiple ingredients are classified into a single food row on the questionnaire, based on the major ingredient and on the role of the item in the diet. Such classification is also typical in the visual guidance (pyramids, plates, etc.) developed by countries to illustrate food-based dietary guidelines.

The following list of examples is brief but should give some guidance for classification of similar items during adaptation of the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) questionnaire.

Principles:

- To err on the side of not falsely inflating food group diversity
- To err on the side of simplicity, when a single ingredient usually dominates in a food or is most likely to dominate in lower-cost versions of the food

Example	Row on questionnaire	Rationale
Bread	Foods made from grains	The primary ingredient in bread is usually a grain. The simplest breads are grain (flour) and water. Rich breads may include small amounts of dairy, eggs, fats or oils, and some types of bread include cheese, fruits or nuts. However, amounts of other ingredients vary and are typically small, and to avoid falsely inflating food group diversity all types of bread should be classified with grains.
Pizza	Foods made from grains	In many settings, pizza is an item high in grain content and **usually** with very small quantities of dairy (cheese), meat or vegetable toppings. The cheaper the item, the less likely there is a substantial quantity of these toppings. To avoid falsely inflating diversity, classify pizza with grains. However, during the adaptation process, a different decision could be made by survey designers in settings where pizza **usually** provides more dairy, meat or vegetables.
Porridge	Foods made from grains or white roots and tubers and plantains	The rationale is the same; the main ingredient is usually a grain or a root or tuber (e.g. cassava) and other ingredients, if present, are present in small quantities.
Cake, sweet pastry	Sweets	These items are classified based on their role in the diet as sweets. Otherwise, they would be classified in the grain group on the same rationale as above. However, there is growing interest in capturing information on consumption of sweets. Further, women who consume cake are unlikely to do so as their only starchy staple for the day, so not counting this item as a grain is very unlikely to affect the number of food groups counted.
Samosas, similar fried savoury pastries	Savoury and fried snacks	Similar to sweets, there is growing interest in capturing information on consumption of energy-dense and nutrient-poor fried snacks. In addition to grain, samosas contain small amounts of meat or vegetables, but the amounts vary and particularly for lower-priced items consumed by the poor, the quantity of meat or vegetable is typically very small.
Sweet drinks with dairy content	Sweet drink	As above, there is growing interest in capturing information about consumption of sugar-sweetened beverages. Many such beverages, and particularly lower-cost items, are marketed and described as containing milk but actually contain little or no milk. These items are classified with sweet drinks to avoid falsely inflating the proportion of women consuming dairy.

Section 3. Model questionnaire

This section provides two elements that comprise the MDD-W questionnaire. The first element is a block of standard text (a "script") to adapt and use in guiding the respondent through an open recall of foods and beverages consumed the previous day and night. The text also includes statements to guide the enumerator in recording information. The second element is a model questionnaire form, which needs to be adapted with local foods (see **Section 4** for guidance on translation and adaptation of the text and questionnaire).

The guidance to enumerators for recording information is provided as an example and is not meant to be prescriptive, as different surveys employ different standard procedures (circling versus underlining or "ticking" foods; codes for "yes" and "no" answers; etc.).

Forms may also optionally provide a space for enumerators to record each food or ingredient as mentioned. A grid structure for morning, mid-day and evening may be helpful. This type of questionnaire structure has been used and found to be helpful in a number of small- to medium-sized surveys; however, it is not reflected in the instruction text below. This approach requires the enumerator to first write the foods/ingredients, then to code each food or ingredient item into its respective row on the questionnaire at the end of each interview. This two-step process may not be feasible in larger surveys.

Increasingly, survey teams may be carrying out Computer-Assisted Personal Interviewing (CAPI) using tablets or other devices to capture data. The methods for marking responses will differ when using CAPI as compared with paper forms.

Guiding the respondent through an open recall and recording information

The following text can be provided to enumerators on a job aid/guidance sheet or included on the questionnaire form; the italics indicate the example script that would be spoken to the respondent:

> *Now I'd like to ask you to describe everything that you ate or drank yesterday during the day or night, whether you ate it at home or anywhere else. Please include all foods and drinks, any snacks or small meals, as well as any main meals. Remember to include all foods you may have eaten while preparing meals or preparing food for others. Please also include food you ate even if it was eaten elsewhere, away from your home. Let's start with the first food or drink consumed yesterday.*
>
> *Did you have anything to eat or drink when you woke? If yes, what? Anything else?**
>
> *Did you have anything to eat or drink later in the morning? If yes, what? Anything else?**
>
> *Did you eat or drink anything at mid-day? If yes, what? Anything else?**
>
> *Did you have anything to eat or drink during the afternoon? If yes, what? Anything else?**
>
> *Did you have anything to eat in the evening? If yes, what? Anything else?**
>
> *Did you have anything else to eat or drink in the evening before going to bed or during the night? If yes, what? Anything else?**
>
> * For each eating episode, after the respondent mentions foods and drinks, probe to ask if she ate or drank anything else. Continue probing until she says "no, nothing else". If the respondent mentions a mixed dish like a soup or stew, ask for all the ingredients in the mixed dish. For mixed dishes where it is possible to pick out ingredients or consume only broth, ask if she herself ate each ingredient or if she only had the broth. Continue to probe about ingredients until she says "nothing else".

INSTRUCTIONS FOR RECORDING INFORMATION

The following text can be provided to enumerators on a job aid or included on the questionnaire form:

> As the respondent recalls foods and drinks, mark the corresponding item in the "Description/ examples to be adapted" column and mark '1' in the response column for that row on the questionnaire. If more than one item in a row is mentioned, mark each item. If the same food or drink is mentioned more than once, you do not need to mark it again after the first time. *[Optionally: If the food is not listed in any of the rows on the questionnaire, write the food in the bottom row labelled "Other beverages and foods".]*

In some surveys, it may be possible for the enumerator to review the foods that have been reported by repeating them to the respondent and making a final probe ("anything else?"), but this will depend on the specific survey context. Immediately after completing the recall, the enumerator should mark "no"[16] for rows where the respondent did not report consuming any items.

[16] Again, the method for marking "no" will vary depending on standard practice preferred by the survey designers; it can be entered as a code "0" in a blank space (|0|) or codes on the form may be circled or ticked.

Model questionnaire

The model questionnaire on the next two pages provides a few examples of food items for each row in the questionnaire. During questionnaire adaptation, these examples of food items need to be replaced by lists of common foods in the local context that fall into the row (see **Section 4**).

Table 3. MDD-W model questionnaire

Required – Rows A–N (14 rows) will be aggregated during analysis into the ten MDD-W food groups			
	Food categories	**Description/examples to be adapted** Consult **Appendix 2** and replace the example foods below with items commonly consumed in the survey area(s).	**Consumed** Yes = 1 No= 0
A	**Foods made from grains**	*Porridge, bread, rice, pasta/noodles or other foods made from grains*	___yes (1) ___no (0)
B	**White roots and tubers and plantains**	*White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains*	___yes (1) ___no (0)
C	**Pulses (beans, peas and lentils)**	*Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh*	___yes (1) ___no (0)
D	**Nuts and seeds**	*Any tree nut, groundnut/peanut or certain seeds, or nut/seed "butters" or pastes*	___yes (1) ___no (0)
E	**Milk and milk products**	*Milk, cheese, yoghurt or other milk products but NOT including butter, ice cream, cream or sour cream*	___yes (1) ___no (0)
F	**Organ meat**	*Liver, kidney, heart or other organ meats or blood-based foods, including from wild game*	___yes (1) ___no (0)
G	**Meat and poultry**	*Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck or other bird*	___yes (1) ___no (0)
H	**Fish and seafood**	*Fresh or dried fish, shellfish or seafood*	___yes (1) ___no (0)
I	**Eggs**	*Eggs from poultry or any other bird*	___yes (1) ___no (0)
J	**Dark green leafy vegetables**	*List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves*	___yes (1) ___no (0)
K	**Vitamin A-rich vegetables, roots and tubers**	*Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside (see **Appendix 2** for other less-common vitamin A-rich vegetables)*	___yes (1) ___no (0)
L	**Vitamin A-rich fruits**	*Ripe mango, ripe papaya (see **Appendix 2** for other less-common vitamin A-rich fruits)*	___yes (1) ___no (0)
M	**Other vegetables**	*List examples of any other vegetables*	___yes (1) ___no (0)
N	**Other fruits**	*List examples of any other fruits*	___yes (1) ___no (0)

Other food categories, not included in construction of MDD-W

Optional; inclusion to be determined by survey designers during adaptation process			
	Food categories	**Description/examples to be adapted** Consult **Appendix 2** and replace the example foods below with items commonly consumed in the survey area(s).	**Consumed** Yes = 1 No= 0
O	**Insects and other small protein foods**	*Insects, insect larvae/grubs, insect eggs and land and sea snails*	___yes (1) ___no (0)
P	**Red palm oil**	*Red palm oil*	___yes (1) ___no (0)
Q	**Other oils and fats**	*Oil; fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds; and all animal fat*	___yes (1) ___no (0)
R	**Savoury and fried snacks**	*Crisps and chips, fried dough or other fried snacks*	___yes (1) ___no (0)
S	**Sweets**	*Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream*	___yes (1) ___no (0)
T	**Sugar-sweetened beverages**	*Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks or sweet tea or coffee with sugar*	___yes (1) ___no (0)
Required			
	Food categories	**Description/examples to be adapted** Consult **Appendix 2** and replace the example foods below with items commonly consumed in the survey area(s).	**Consumed** Yes = 1 No= 0
U	**Condiments and seasonings**	*Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds*	___yes (1) ___no (0)
V	**Other beverages and foods**[a] ***(optionally, specify if not listed)***	*Tea or coffee if not sweetened, clear broth, alcohol* *Pickles, olives and similar* _____	___yes (1) ___no (0)

[a] If rows O, P, Q, R, S and/or T are not included, examples for the "Other beverages and foods" category must be expanded to include these types of items.

The final two rows ("Condiments and seasonings" and "Other beverages and foods") should always be included on the questionnaire.

Section 4. Preparing the MDD-W questionnaire

Before measuring MDD-W in a new setting, it is important to prepare the data collection materials to reflect the foods and dietary habits of the target population. This section covers a series of steps to be carried out by survey designers for preparing a linguistically and culturally adapted MDD-W questionnaire.

In locations where previous food group diversity surveys have been implemented, existing questionnaires can be useful inputs to this process. If it is known that previous surveys were prepared following a thorough process (i.e. steps similar to those described in this guide), questionnaire adaptation can be much shorter, as food items on previous questionnaires can be used to populate the adapted MDD-W questionnaire.

Steps for adapting the model questionnaire in **Section 3** include: making a decision on the data collection approach and on how many of the optional categories to include; creating a basic translation of the MDD-W model questionnaire in the survey language(s); and reviewing and adjusting the translated enumerator instructions and introductory text using words and phrases that are easily understood by both the enumerators and the respondents. Following this, it will be necessary to adapt the foods listed in each row of the MDD-W model questionnaire to include seasonally and locally available foods commonly consumed, using local names where appropriate.

This preparatory work can be undertaken at a basic level or, if time and resources permit, may be expanded to include qualitative research on different population subgroups to ensure completeness of the food and beverage examples listed in each questionnaire row and to gather local recipes for mixed dishes. While this second level of adaption is highly recommended so that the list of foods consumed by survey populations will be as accurate as possible, it may not be feasible to carry out in all cases.

Decision on method for collecting the information

The survey team will need to decide whether to follow the recommended method of soliciting an open recall of all foods and beverages consumed from when the respondent awoke the previous day through the day and night, or whether to use the list-based method of inquiring about each food group (see **Section 1**, Methodological approaches to measurement of food group diversity, and **Appendix 3** for discussion of the list-based method). This decision will determine the type of enumerator instructions and the opening text to read to respondents, as well as enumerator training content.

Content of the survey-specific MDD-W questionnaire

The model questionnaire provided in **Section 3** includes 22 mutually exclusive food groups and categories, 14 of which will be aggregated to create the MDD-W 10 food group indicator. Among the remaining eight categories, at a minimum the "Condiments and seasonings" and "Other beverages and food" categories (rows "U" and "V" on the model questionnaire) must be included.

Survey designers should decide whether or not to include the other optional categories (rows "O" through "T" on the model questionnaire) in addition to those required for constructing the MDD-W indicator. For example, they need to determine if insects and other small protein foods and red palm oil are consumed in the survey area and if so, to decide whether to include these categories on the questionnaire.

In addition to the categories listed in the model questionnaire, other foods of interest, including fortified and/or biofortified foods, can be added. Also, model questionnaire rows could be further disaggregated for data collection if survey designers want to capture consumption of one or more specific foods within an MDD-W food group or other food category. This may be the case when specific food items are promoted during interventions.

When modifying the questionnaire in these ways, survey designers should take care to ensure that it is still possible to construct the MDD-W indicator.

In the case when questions are added to capture consumption of fortified or biofortified foods, it is best to train enumerators to mark items in their "home" food group (e.g. grains, for fortified flour or golden rice) in addition to eliciting answers for added questions specific to fortified/biofortified foods. Note this "breaks the rule" of mutually exclusive food groups and categories as found in the model questionnaire. But marking in "home" food groups allows the standard construction of the MDD-W indicator.

When further disaggregating food groups to capture specific targeted foods, the questionnaire rows should be mutually exclusive. The tabulation instructions need to be modified to reflect the disaggregation.

When using the open recall method, further disaggregation of questionnaire rows does not affect responses or results, because the enumerator does not read the lists of items/examples to the respondent. However, when the list-based method is used, disaggregation of groups is likely to result in recall of more food items and can change survey results.

Translation and adaptation of the questionnaire

INITIAL TRANSLATION OF THE MDD-W MODEL QUESTIONNAIRE INTO SURVEY LANGUAGES

This guide, which is in English[17], contains an MDD-W model questionnaire. In countries where English is not the predominant language, the MDD-W model questionnaire with its generic food examples should be translated first into one of the major survey languages as a starting point for the linguistic and cultural adaptation work that follows. There are several methods of ensuring good translation, including group work to reach consensus on translation and back-translation to English[18]. This initial

[17] There are plans to make Spanish and French versions available in the future.

[18] Although back-translation of survey questionnaires has been a common practice, some now emphasise focusing attention on first producing the best possible translation and then directly evaluating the translation produced in the target language, rather than indirectly through a back-translation. See, for example, http://ccsg.isr.umich.edu/translation.cfm.

translation into the predominant survey language will reflect the generic examples of foods provided in the MDD-W model questionnaire. The initial translation will be the starting point for adapting the questionnaire in other survey languages, if any.

BASIC LEVEL OF LINGUISTIC AND CULTURAL ADAPTATION OF THE MDD-W QUESTIONNAIRE

Linguistic and cultural adaptation means modifying the translated MDD-W questionnaire to reflect cultural norms, vocabulary and usage (words and phrases) that will be easily understood and to include locally available and commonly consumed foods. This step will be carried out by the survey designers in consultation with a nutritionist and involves customising the introductory text and the food items in each questionnaire row.

Involvement of field staff (enumerators and supervisors) is also ideal, because in an open recall enumerators will be required to correctly classify reported foods into the food categories listed in each row on the questionnaire. Their ability to do this will be influenced by their comprehension of the objectives and by the quality and comprehensiveness of the examples filled in for each food category. Thus, involving field staff early in the adaptation process provides additional assurance of their ability to collect accurate information during the survey. Their input is also useful in reviewing the translation of the introductory text to make sure the language and terms will be understood by the respondent. Particular attention should be taken to carefully translate terms used to describe key concepts (such as “meal”, “snack” or “main meal”).

During this step, the names of the food categories should be reviewed and translated, and the list of examples in each filled in with a comprehensive list of seasonally and locally available foods, using local names where appropriate. (**Appendix 2** provides guidance on how to classify individual food items into the questionnaire rows.) At some time during the process, it will be necessary to consult with individuals familiar with commonly consumed foods in the target population and with a nutritionist to review the draft questionnaire and advise on correct classification of the food items into the rows. The review can be done either by the nutritionist alone or, ideally, together with the survey designers and the field staff. Other resources may be consulted as well, such as questionnaires from nutrition modules in previous surveys, if available.

If the survey team is unable to carry out the second level of adaptation (below) because of time and/or resource limitations, the work to identify ingredients of commonly consumed mixed dishes and foods likely to be consumed in small quantities, as described in the next section, should be done during the basic adaptation, using information from team members and knowledgeable persons.

SECOND LEVEL OF ADAPTATION

When time and resources permit, it is strongly recommended that a second level of adaptation be carried out to complete the lists of example food items for the questionnaire rows. This step involves consultations with members of the target population in the form of key informant interviews and focus group discussions in different subpopulations or locations within the survey area(s)[19]. These conversations provide critical information on:

- Seasonally and locally available food items (including foods gathered in the wild) and their common names
- Commonly consumed mixed dishes and ingredients used in these local dishes

[19] This step may be incorporated into enumerator training, as was done in Tajikistan, when the training was focused only on collecting dietary diversity information (see http://www.fao.org/fileadmin/templates/nutrition_assessment/Workshops/ Training_Report_Khujand_April_2015__03062015_.pdf). However, this would not be practical when training on the MDD-W is incorporated into a broader enumerator training session for multi-topic surveys.

- Foods that are typically consumed in small amounts that should not count as part of an MDD-W food group (see **Box 1**) but rather should be classified as condiments or seasonings
- Commonly consumed "street foods" and prepared foods purchased outside the home

Informants for this process can include experts at the local and national levels, community leaders, agricultural or health extension workers at the local level and women in the community who are responsible for food planning and preparation for their households. Informants from various communities in the survey area whose food patterns may differ should also be included: urban, rural and peri-urban residents, and different ethnic and livelihood groups. For surveys that will be carried out over large geographic areas with distinct dietary practices by location, it may be necessary to produce more than one adapted questionnaire.

OUTPUTS FROM THE LINGUISTIC AND CULTURAL ADAPTATION

Outputs of the adaptation process always include the adapted MDD-W questionnaire and can include job aids/guidance sheets on common ingredients of mixed dishes and on foods to place in the "Condiments and seasonings" category. Such guidance sheets are extremely useful for enumerator training, as well as for use as reminders during data collection. They may be in the form of cards, photographs or printed sheets.

Once this preparatory work has been done in a specific geographic area, subsequent surveys could use the same adapted questionnaires, enumerator instructions and guidance sheets, greatly reducing the preparation time.

Field testing, finalisation and piloting

FIELD TESTING

Before finalising the MDD-W questionnaire, it is recommended that a small field test with a limited number of respondents (5–10 may be sufficient) be carried out to make sure that the examples in each questionnaire row are complete and that the respondents understand the script and the probing that elicit their open recall. The respondents are usually informed that this is a trial to improve the data collection instrument, and they may be interviewed afterwards to get their views on how well they understood the questions and were able to answer them. Members of the survey team would conduct interviews with a small convenience sample in locations similar to where the survey will be conducted and compare notes afterwards to identify any gaps or potential problems in comprehension by the respondents. Fine-tuning may be required to complete the food lists for each row or to modify the script and probing questions to improve clarity.

This last step in the adaptation process does not replace the standard practice of piloting the complete and final questionnaire when the MDD-W is incorporated into larger multi-topic surveys (see below).

FINALISATION OF THE MDD-W QUESTIONNAIRE

Once these steps have been carried out in the major survey language, the final version of the MDD-W questionnaire is ready for use. If the survey is to be carried out using multiple languages, it will be necessary to repeat the steps above for each language to ensure that instructions are clearly understood and that the questionnaire includes the correct names of foods in each language. However, if the process of translation and adaptation into the first language is thorough, adaptation to additional languages can be more rapidly accomplished.

PILOT STUDIES IN THE CONTEXT OF THE LARGER SURVEY

In most situations, MDD-W will be measured in the context of surveys that include multiple topics and modules. A pilot study is a practice of all the survey steps, from start to finish, including all survey modules and procedures. Often a convenience sample of approximately 50 respondents is interviewed and their responses coded and analysed. Questions that are not clearly understood are modified, problems administering the questionnaire are addressed and the final revisions of the questionnaire are made[20].

[20] See, for example, http://www.tools4dev.org/wp-content/uploads/how-to-pretest-and-pilot-a-survey-questionnaire.pdf.

Section 5. Selection and training of enumerators

Enumerator selection

Since the open recall method recommended in this guide places the burden on the enumerator to correctly classify reported foods into the rows on the questionnaire, it is strongly recommended to use enumerators who have some training in nutrition surveys or who have participated in the questionnaire adaptation. Ideally, enumerators will also have direct personal experience in shopping for and preparing local foods; in many cultures, this means they will be female.

When the MDD-W is included in large-scale, multi-topic surveys, it might not be possible to select enumerators with this range of knowledge and survey experience. In any case, it is recommended that enumerators have some post-high school education and experience in survey methodology and interviewing.

Enumerator training

TOPICS TO COVER DURING TRAINING

This section highlights a few main points and issues unique to training enumerators for collecting food group diversity data using the recall method[21].

Training should include classroom instruction, discussion and field practice. Once the questionnaire rows with locally available foods are reviewed, a fair amount of time should be allotted to discussions, as the trainees need to be familiar with the foods (including commonly consumed mixed dishes) and their classification into rows in order to correctly record data on the MDD-W questionnaire.

The following scheme provides some points to consider when designing enumerator training for the MDD-W.

A. Introduction to and meaning of dietary diversity and the MDD-W

- Discuss the objectives of the questionnaire, i.e. to gain information on the foods and food groups consumed by the woman respondent the previous day and night. Explain that healthy diets are diverse and include many foods and food groups. Explain and show that the questionnaire organizes foods into groups by showing food items in rows of similar foods.
- Explain that the final output from the questionnaire is a count of food groups and explain that there are some rows that "count" and others that do not "count", either because the foods are not nutritious or because people usually consume very small amounts.

[21] Many resources are available that cover enumerator training more generally. See, for example, the Demographic and Health Surveys manual for training field staff.

B. Description of questionnaire rows and exercises in classifying foods

- Review the groupings listed on the adapted questionnaire (MDD-W groups and other categories) and clarify any questions regarding why items are placed in the various rows. Special issues may need to be discussed and specific guidance given, such as classifying beverages, condiments and seasonings, etc. (see **Appendix 2** for a list of foods that are difficult to classify).
- In an exercise, have enumerators sort/classify foods into the appropriate rows of the adapted questionnaire (e.g. using a stack of food cards or photographs).

C. Introduction to the open recall method and to recording information on the MDD-W questionnaire

- Explain the principles behind the open recall method (to obtain a report of all foods and drinks consumed by the respondent during the day and night at meals, between meals and during food preparation, and consumed both in the home and outside the home).
- Explain the time period of the recall – from the time the respondent woke the previous day through the day and overnight. Explain that the aim is to gather information about a 24-hour period.
- Explain the concept of mixed dishes.
- Discuss how to probe about mixed dishes and where to place ingredients in the questionnaire rows. If available, introduce the guidance sheets on common mixed dishes developed during the adaptation phase and practice using them.
- Explain that certain foods are classified in only one row even if they have several ingredients (e.g. bread).
- Review the "Condiments and seasonings" list developed during the adaptation phase and (if available) explain how to use the guidance sheets to aid in correctly classifying these items.
- Explain and demonstrate an open recall and show how enumerators should record the information on the questionnaire when using a printed questionnaire or tablet.

D. Practice in carrying out the open recall

- In an exercise, have trainees practice/role play in pairs and then select several pairs to practice in front of the group. Ask other trainees to comment on the role play; follow with corrections as needed.
- Review the questionnaires marked during the role plays, correcting errors as needed.
- Throughout training, allow sufficient time for questions and comments from enumerator trainees, as this may indicate the need to modify some parts of the questionnaire, enumerator instructions or guidance sheets to improve ease of administration and clarity for the respondent.

E. Final adjustment of questionnaire prior to data collection

- Follow standard practices established by the survey organizers for field testing and field practice by trainees; standard practice will vary by the type and scale of the survey in which the MDD-W questionnaire is embedded.
- Following training, field testing and piloting, revise the questionnaire and enumerator instructions as needed and review all changes with enumerator trainees.

Normal practice for large-scale, multi-topic surveys is to conduct thorough enumerator training that may last 2 weeks or more, with pilot testing of the entire survey (all survey modules) prior to starting data collection. When the MDD-W is included, it would be ideal, although not always realistic, to schedule up to 2 days on the MDD-W into the overall enumerator training schedule. If the enumerators are nutritionists or have experience with nutrition questionnaires, initial training could be accomplished in 1 day. In all cases, enumerators can continue to learn during survey implementation through direct feedback from supervisors, debriefing and group discussions during field staff meetings and, in the case of extended periods of data collection, through periodic retraining.

Section 6. Tabulation, presentation and interpretation

Constructing the MDD-W indicator

To construct the MDD-W indicator, the first step is to combine (aggregate) questionnaire rows (food groups and subfood groups) into the 10 MDD-W food groups, as shown in **Table 4.**

Table 4. Aggregation to construct Minimum Dietary Diversity for Women of Reproductive Age (MDD-W)

Groups/items/rows on model questionnaire[22]		10 food groups in MDD-W
A. B.	Foods made from grains White roots and tubers and plantains	1. Grains, white roots and tubers, and plantains
C.	Pulses (beans, peas and lentils)	2. Pulses (beans, peas and lentils)
D.	Nuts and seeds	3. Nuts and seeds
E.	Milk and milk products	4. Dairy
F. G. H.	Organ meat Meat and poultry Fish and seafood	5. Meat, poultry and fish
I.	Eggs	6. Eggs
J.	Dark green leafy vegetables	7. Dark green leafy vegetables
K. L.	Vitamin A-rich vegetables, roots and tubers Vitamin A-rich fruits	8. Other vitamin A-rich fruits and vegetables
M.	Other vegetables	9. Other vegetables
N.	Other fruits	10. Other fruits
Other categories not included in MDD-W		
O.	Insects and other small protein foods	
P.	Red palm oil	
Q.	Other oils and fats	
R.	Savoury and fried snacks	
S.	Sweets	
T.	Sugar-sweetened beverages	
U.	Condiments and seasonings	
V.	Other beverages and foods	

For example, if a questionnaire is coded "1" for "yes" for either subgroup "A" or "B", the woman receives a point for the first MDD-W group ("Grains, white roots and tubers, and plantains"). **She does not receive an additional point if she consumed food items from both subgroups.** The 10 MDD-W groups are first summed into a score ranging from 0 to 10. Each woman is then coded "yes" or "no" for scoring ≥ 5, followed by calculation of the proportion of women who score from 5 to 10.

[22] The order of items/rows differs slightly on the list-based questionnaire in Appendix 3. When using the list-based method, for example, it is better to have "Vitamin A-rich vegetables, roots and tubers" precede "White roots and tubers and plantains" to avoid misclassification of orange-/yellow-fleshed sweet potatoes, carrots, etc.

Since many users may also calculate the infant and young child feeding (IYCF) indicator for MDD, **Appendix 4** provides a table showing how the ten food groups in the MDD-W compare with the seven groups in the IYCF MDD indicator. See also **Table 1** in Section 1 for a comparison of the indicators.

Presentation and interpretation of results

Presentation can be as simple as the percent of WRA achieving MDD-W or "minimum dietary diversity". The indicator was developed for exactly this purpose, i.e. when a single, simple, dichotomous indicator is needed.

The interpretation of the indicator is: "X% of women achieved minimum dietary diversity, and they are more likely to have higher (more adequate) micronutrient intakes than the X% of women who did not".

In some cases, it may be useful to present results separately by selected geographic, socioeconomic or household characteristics (e.g. urban vs. rural households, by region, by wealth quintile or by level of education), but decisions on appropriate disaggregation will be survey- and context-specific and will depend on objectives, sampling and sample sizes. Example figures on the following pages present hypothetical data for urban and rural households.

While designed to meet the need for a single, simple indicator, the data collected to construct the indicator also provide a rich description of diet patterns. The information may also reflect specific food groups of interest in particular contexts (e.g. animal-source foods, fruits and vegetables, nutrient-poor and/or energy-dense groups and other specific food groups promoted in interventions).

The following figures are illustrative and are not an exhaustive set of presentation options.

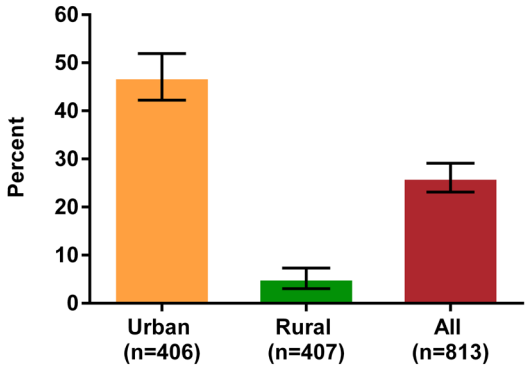
The data used to generate the graphs are from two data sets, one urban and one rural, with a sample size of approximately 400 in each site[23]. Figures show percent and means (standard deviation), along with 95% confidence intervals.

FOOD GROUP DIVERSITY

In addition to presenting the percent of WRA achieving minimum dietary diversity, it can be useful to present the average (mean) diversity score and a histogram illustrating the distribution of scores. This is especially useful where the percentage of women consuming foods from five or more food groups is low, as in the rural site shown below.

[23] Real data were used, but to create data sets of equal size in urban and rural sites, data were randomly replicated (repeated) within the data sets.

Figure 1. Percent achieving Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) (≥5 food groups yesterday)



(Error bars indicate 95% confidence interval)

Figure 2. Mean (SD) number of food groups yesterday

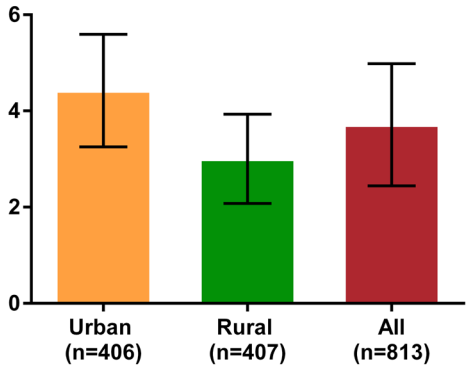
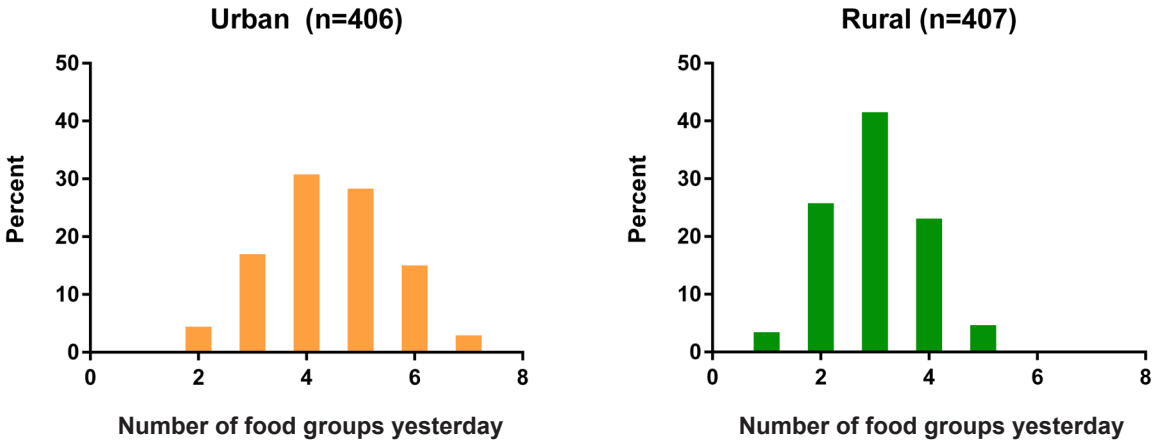
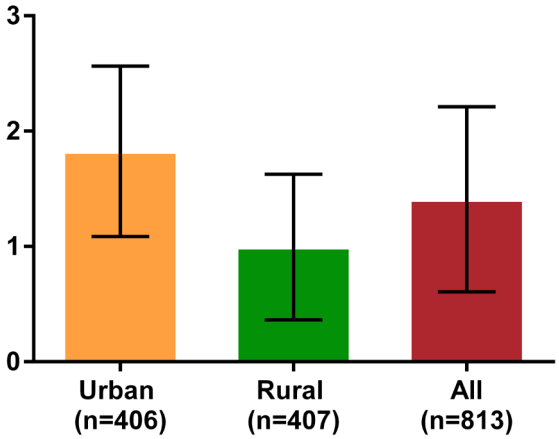


Figure 3. Food group diversity scores for yesterday (out of 10 groups)



It may also be useful to present the average number of fruit/vegetable groups consumed out of the four groups ("Dark green leafy vegetables", "Other vitamin A-rich fruits and vegetables" [usually dark yellow/orange/red], "Other fruits" and "Other vegetables")[24].

Figure 4. Mean (SD) number of fruit/vegetable groups yesterday (out of 4 groups)



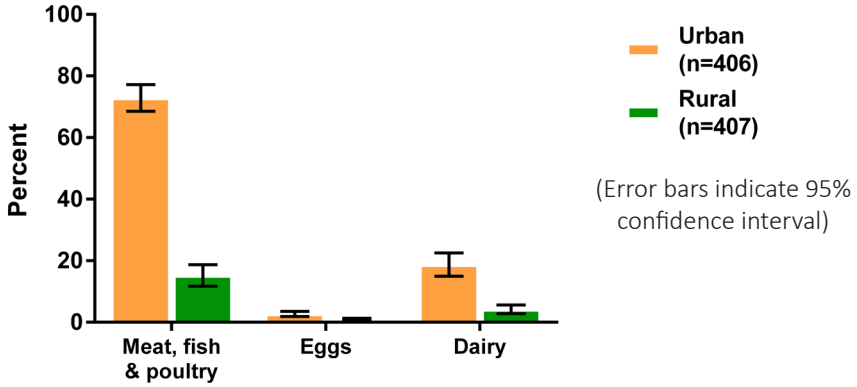
Consumption patterns for specific food groups

Presentation and examination of the percent of WRA consuming foods from specific food groups and subgroups provide a good qualitative description of the diet. Both the nutrient-rich food groups in the MDD-W and the optional, low nutrient density food groups may be of interest.

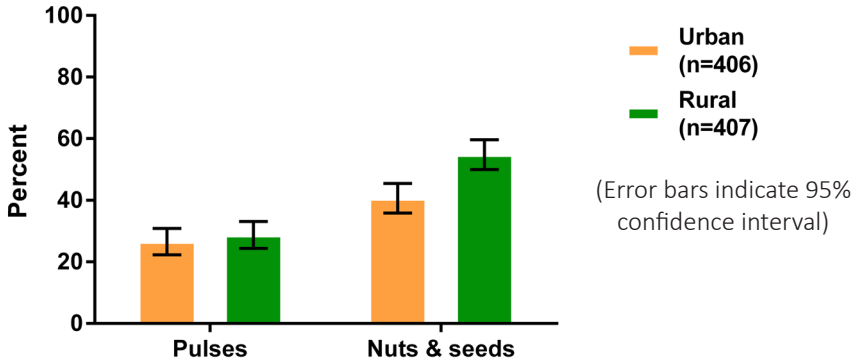
[24] Different fruit/vegetable groups have different nutrient profiles, so consumption of a variety best ensures good intakes of micronutrients, as well as of other phytochemicals and fibre. Many national FBDG explicitly advise consumption of a variety of types or colours of fruits and vegetables, and several specifically advise consumption of dark green leafy vegetables; see global FBDG compiled by FAO at http://www.fao.org/nutrition/nutrition-education/food-dietary-guidelines/en/.

Figure 5. Percent consuming nutrient-rich foods yesterday

A. Animal-source foods



B. Pulses, nuts & seeds



C. Fruits and vegetables

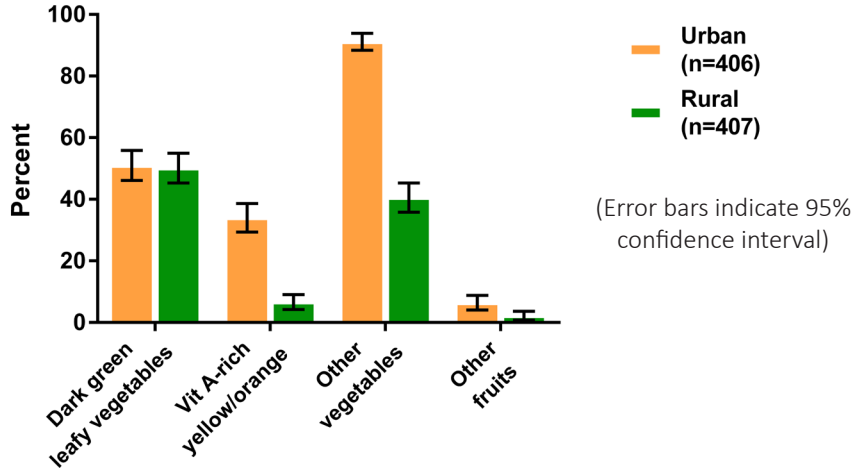
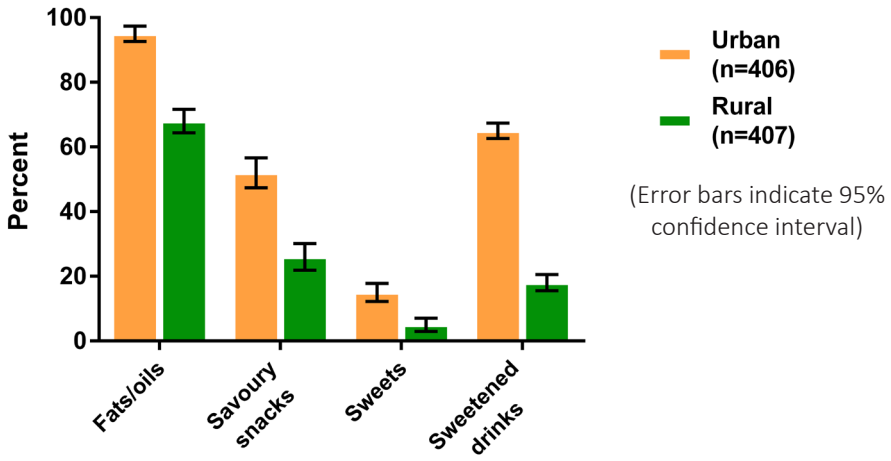


Figure 6. Percent consuming low nutrient density food groups yesterday[25]



The results shown in this section could also be presented in a tabular format.

The data from the MDD-W questionnaire also allow for a variety of context-specific descriptive analyses. For example, differences in food group consumption for those above or below the threshold can be explored and will vary by context. **Table 5** shows these differences in the same urban and rural sites used in the examples above.

Table 5. Percent consuming foods from various food groups yesterday, when above or below threshold of five food groups, by site[a]

	Rural		Urban	
	<5 groups	≥5 groups	<5 groups	≥5 groups
Pulses (beans, peas and lentils)	26	71	26	27
Nuts and seeds	52	100	18	66
Dairy	2	0	9	29
Meat, fish or poultry	14	38	58	90
Dark green leafy vegetables	49	71	32	73
Other vitamin A-rich fruits or vegetables	4	48	17	53
Other vegetables	40	57	88	94
Other fruit	1	19	2	12

[a] Starchy staples were consumed by 100 percent of women, and eggs were consumed by none in the rural site and by <1% of women in the urban site.

All data presentation choices will depend on the audience and objectives for presentation.

[25] These data were not collected in the source data set used to construct other figures, so values are not real.

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Appendix 1. Sampling and design issues specific to measurement of Minimum Dietary Diversity for Women of Reproductive Age

There are numerous sampling, sample size and survey design decisions that depend on the objectives and context for data collection, but a general discussion of these issues is beyond the scope of this manual.

However, there are a few decisions specific to measurement of food group diversity for women of reproductive age (WRA), including selection of respondent(s) within the household, sampling of days of the week, sampling of "unusual" days (e.g. feasts) and issues related to seasonality.

Selection of respondent(s) within the household

There are two options for selection of respondent women within the household: selection of all age-eligible women or random selection of one age-eligible woman. Note that all age-eligible women include those considered to be living in the household, even if not present at the time the survey team visits.

Age

For both options, first screen women on age and select those who have reached their 15th birthday but who have not yet reached their 50th birthday. In cases where exact birth dates or ages are unknown, local calendars are sometimes used to help establish estimated ages[26].

Number of respondents

The decision on whether to include all women in the household or to randomly select one will depend on the broader sample design decisions.

Random selection of one of several women within a household requires use of appropriate sampling weights during analysis to avoid under-representation of women who live in larger households with multiple WRA. Calculation of sampling weights in turn requires information on the number of age-eligible women in the household.

Selection of all age-eligible women results in non-independent observations and this too must be handled appropriately during data analysis.

Either choice is valid, so long as analysis methods and inferences account correctly for this choice.

Sampling of days of the week

Every effort should be made to collect data on all days of the week. People may eat differently on different days of the week; this is part of the overall diet and part of the picture of diet quality at population level. If days of the week are represented with equal frequency in the data set, eating patterns will also be properly represented. If it is not possible to collect data on all days of the week, for example, for legal or cultural reasons associated with work on the Sabbath, it is still important to have data collection take place on the other 6 days.

[26] See, for example: FAO. 2008. *Guidelines for Estimating the Month and Year of Birth of Young Children* (available at http://www.ifad.org/hfs/docs/guidelines.pdf). This document describes the use of local calendars.

Sampling "unusual" days

In general, there is no need to avoid using feast days, weddings or other celebration days as the day recalled by the respondent, for the same reason noted above in relation to sampling all days of the week. It is fine if some individuals in the sample have consumed more than usual, for one reason or another, on the day recalled. This is part of normal variation in intakes.

However, if a large proportion of a community has participated in a special feast or celebration, it is better not to visit (sample) that community the following day, as the recall day would be unusual for the entire community.

Ramadan presents a specific problem because of its duration and because eating patterns may be different for many or all members of the community as compared with all other times of year. Except in the context of surveys that are rolling or that sample the entire year, it is better to avoid fielding food group diversity surveys during Ramadan. If it is necessary to field during Ramadan, this should be considered during interpretation of results.

While certain days of the week and/or celebrations may entail increased and more varied intakes, intakes and variety may be lower than usual when people are ill. However, there is no need to avoid sampling or using data from days when respondents report that they had low appetite or illness on the day recalled. This too is part of normal variation in intakes within a population on any given day.

In summary, unusual intakes at the individual level are not a problem and should not be treated differently during data collection or analysis. However, when there is reason to believe intakes for an entire community or a large segment of the community would be highly unusual, it is better to avoid surveying at that time.

Seasonality

Diet patterns in many contexts vary with season. For example, mango season may strongly affect the proportion of women reporting consumption of vitamin A-rich fruits and thus may affect the proportion reaching the threshold of five or more food groups. Other seasonal foods may have less impact; for example, in some settings, types of green leafy vegetables vary with season, but one type or another is consumed year-round.

It is also possible for food group diversity to increase during lean/hunger seasons, when foraged foods may be consumed. These foods may add diversity, and even micronutrients, but in the context of inadequate caloric intakes. In this situation, an increase in diversity cannot be viewed in isolation.

Survey designers should consider seasonality when fielding and when interpreting results from food group diversity surveys. In particular, avoid direct comparisons between surveys conducted during different seasons, if it is apparent that seasonality could affect diversity in the context[27]. Similarly, avoid direct comparisons between surveys conducted in different geographic areas experiencing different seasons – for example, do not compare results from the hunger season in one zone to the post-harvest season in another, even if they occur in the same month.

Ideally, food group diversity indicators should not be compared unless there are rolling surveys covering all seasons or the indicators are generated from surveys carried out in the same season. When data and capacity allow (e.g. in research contexts), it is also possible to adjust for seasonality using the survey date and geographic positioning system data.

This challenge is not unique to data collection for the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) indicator; seasonality is an issue for many food security, health and nutrition indicators.

[27] The exception would be in research or other contexts where survey designers aim to capture and describe seasonal variation, as the topic of study.

Appendix 2. Guidance on assigning individual foods to food groups for Minimum Dietary Diversity for Women of Reproductive Age[28]

This appendix provides extensive examples for each of the rows on the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) model questionnaire in **Section 3** of the guide.

Fourteen groups (rows) on the questionnaire are used to construct the ten MDD-W food groups. Several of the MDD-W food groups are further divided on the questionnaire (e.g. meat and poultry are separated from fish and seafood). These 14 rows (A–N) are followed by 6 optional categories (rows O–T on the questionnaire) and two required final categories (row U, "Condiments and seasonings", and row V, "Other beverages and foods").

Examples are provided for rows A–V on the model questionnaire. At the end of this appendix, following the examples for row V, there is a table providing guidance on typical classification challenges.

Note that the row order differs in the alternative list-based questionnaire in **Appendix 3**. This is because when using the list-based method, it is necessary to consider how the order of the foods listed might influence responses to avoid double-counting of certain foods. This is not an issue in an open recall. See Appendix 3 for further explanation.

This appendix can be used during adaptation of the questionnaire.

When listing example items in each row of the questionnaire, use local names for foods. This is especially important for staple foods and other groups where the source ingredient typically undergoes processing (commercially or in the home). For example, rather than listing "wheat" on the questionnaire, list local food names, such as bread, chapatti, noodle, pasta, roti, seitan and/or wheat tortilla. Similarly, in the pulses group, be sure to list hummus, tofu and/or other locally consumed processed products made from pulses. In other food groups, food and ingredient names may be fine (e.g. most fruits and vegetables).

[28] This section is adapted from: WHO. 2010. *Indicators for assessing infant and young child feeding practices Part 2: Measurement*. WHO: Geneva.

A. Foods made from grains

Include products and foods derived from cereal crops. Any staple dishes or products like breads *(e.g. bagels, rolls, chapatti, roti, tortillas*), porridge *(ugali, nsima/nshima, posho, sadza, mealies, dalia, muesli, papilla, grain fufu)* and noodles *(pasta, soba, spaghetti, vermicelli)* made from the grains listed below, and from flours of these grains, should be included in this category.

Sweet biscuits and cakes are **not** included and are classified with "Sweets" (category "S" below).

Common name ***(regional common names)***	***Binomial name OR genus***	**Family**	**Edible part of the plant**
Amaranth *(kiwicha)*	*Amaranthus*	Amaranthaceae	Seed
Barley	*Hordeum vulgare*	Poaceae	Seed
Buckwheat	*Fagopyrum esculentum*	Polygonaceae	Seed
Corn *(maize)*	*Zea mays*	Poaceae	Seed
Fonio	*Digitaria exilis*	Poaceae	Seed
Kamut	*Triticum turanicum*	Poaceae	Wheat-like seed
Millet	*Pennisetum typhoides*	Poaceae	Seed
Oats	*Avena sativa*	Poaceae	Seed
Palmer's grass	*Distichlis palmeri*	Poaceae	Wheat-like seed
Qañiwa *(kañiwa, canihua)*	*Chenopodium pallidicaule*	Amaranthaceae	Seed
Quinoa *(quinua)*	*Chenopodium quinoa*	Amaranthaceae	Seed
Rice	*Oryza sativa*	Poaceae	Seed
Rye	*Secale cereale*	Poaceae	Seed
Sorghum	*Sorghum bicolour*	Poaceae	Seed
Spelt	*Triticum spelta*	Poaceae	Wheat-like seed
Teff	*Eragrastris albysinnica*	Poaceae	Seed
Triticale *(cross between wheat and rye)*	*Triticosecale*	Poaceae	Seed
Wheat	*Triticum*	Poaceae	Seed

B. White roots and tubers and plantains

Include non-coloured items mainly providing carbohydrate. This group includes all non-grain-based starchy staples. Any staple dishes/casseroles and pastes made from roots, tubers and plantains should also be included in this category.

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Ahipa *(ajipa)*	*Pachyrhizus ahipa*	Fabaceae	Tuberous root
Arracacha *(racacha, white carrot)*	*Arracia xanthorhiza*	Apiaceae	Tuberous root
Arrowroot	*Maranta arundinacea*	Marantaceae	Rhizome
Bananas *(green/unripe)*	*Musa*	Musaceae	Starchy fruit
Breadfruit	*Artocarpus*	Moraceae	Starchy fruit
Burdock root	*Arctium lappa*	Asteraceae	Taproot
Canna lily *(achira)*	*Canna*	Cannaceae	Starchy rhizome
Cassava *(yucca, manioc, mandioca)*	*Manihot esculentum*	Euphorbiaceae	Tuberous root
Chicory root	*Cichorium intybus*	Asteraceae	Tuberous root
Elephant foot yam *(white)*	*Amorhophallus paeoniifoleus*	Araceae	Starchy corm
Jicama/Yambean	*Pachyorhizuserosus*	Fabaceae	Tuberous root
Lotus root	*Nelumbo nucifera*	Nelumbonaceae	Spongy root
Maca	*Lepidium meyenii*	Brassicaceae	Tuberous root
Mashwa *(mashua)*	*Tropaeolum tuberosum*	Tropaeolaceae	Stem tuber
Mauka	*Mirabilis longiflora*	Nyctaginaceae	Tuberous root
Nopal	*Opuntia*	Cactaceae	Succulent stem
Oca	*Oxalis tuberosa*	Oxalidaceae	Tuberous root
Parsnip	*Pastinacea sativa*	Apicaceae	Tuberous root
Plantains *(ripe and green)*	*Musa*	Musaceae	Starchy fruit
Potatoes *(all skin colours – white, yellow, blue, purple, black)*	*Solanum tubeosum*	Solanaceae	Stem tuber
Rutabaga	*Brassica napobrassica*	Brassicaceae	Tuberous root
Sweet potato *(white/pale yellow-fleshed)*	*Ipomoea batatas*	Convolvulaceae	Tuberous root
Tannia *(yautia)*	*Xanthosoma sagittifolium*	Araceae	Starchy corm
Taro root *(cocoyam, dasheen, eddo, tannia, colocasia, arbi/arvi)*	*Colocasia esculenta*	Araceae	Starchy corm
Turnip	*Brassica rapa*	Brassicaceae	Tuberous root
Ulloco *(melloco)*	*Ullucus tuberosus*	Chenopodiaceae	Stem tuber
Water chestnut	*Eleocharis dulcis*	Cyperaceae	Starchy corm
Yam	*Dioscorea*	Dioscoreaceae	Tuberous root

C. Pulses (beans, peas and lentils)

This group includes members of the plant family Fabaceae (alternate name Leguminoseae), including beans, peas and lentils. The seeds are harvested at maturity and dried and used as food or processed into a variety of food products. This group does not include the same plants harvested green/ immature and eaten fresh in the pod – these are included in the "Other vegetables" group (group "M"). It also does not include groundnut (peanut), because while groundnut is in the Fabaceae family, both its high fat content and most common culinary uses are different from other legumes and similar to those of tree nuts. Groundnut is included in the "Nuts and seeds" group (group "D").

The pulses group includes mature seeds (beans), sprouted pulses and processed/prepared products, such as hummus, tofu, tempeh, soy milk, soy cheese, texturized vegetable protein and other soy products and products of any of the pulses listed in the table.

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Adzuki bean	*Vigna angularis*	Fabaceae	Mature seed
Bambara groundnut *(jugo bean)*	*Vigna subterranea*	Fabaceae	Mature seed
Broad bean *(fava bean, faba bean, horse bean, field bean, tic bean)*	*Vicia faba*	Fabaceae	Mature seed
Chickpea *(chana dal)*	*Cicer arietinum*	Fabaceae	Mature seed
Cluster bean *(guar)*	*Cyamopsis tetragonoloba*	Fabaceae	Mature seed
Common bean *(black bean, kidney bean, pinto bean, others)*	*Phaseolus vulgaris*	Fabaceae	Mature seed
Coral bean *(Cherokee bean)*	*Erythrina herbacea*	Fabaceae	Mature seed
Cowpea *(black-eyed pea, catjang, yardlong bean, southern pea, zombi pea)*	*Vigna unguiculata*	Fabaceae	Mature seed
Horse gram	*Macrotyloma uniflorum*	Fabaceae	Mature seed
Hyacinth bean	*Lablab purpureus*	Fabaceae	Mature seed
Jack bean	*Canavalia*	Fabaceae	Mature seed
Lentil *(dal, pulses)*	*Lens culinaris*	Fabaceae	Mature seed
Lima bean	*Phaseolus limensis*	Fabaceae	Mature seed
Lupin *(lupini, tarwi, tarhui, chocho)*	*Lupinus sp.*	Fabaceae	Mature seed
Moth bean	*Vigna aconitifolia*	Fabaceae	Mature seed
Mung bean *(green gram)*	*Vigna radiata*	Fabaceae	Mature seed
Pea	*Pisum sativum*	Fabaceae	Mature seed
Pencil yam	*Vigna lanceolata*	Fabaceae	Mature seed
Pigeon pea	*Cajanus*	Fabaceae	Mature seed
Rice bean	*Vigna umbellata*	Fabaceae	Mature seed
Soybean *(soya bean)*	*Glycine max*	Fabaceae	Mature seed
Sweet pea	*Lathyrus odoratus*	Fabaceae	Mature seed
Urad bean *(black gram)*	*Vigna mungo*	Fabaceae	Mature seed
Velvet bean *(cowitch)*	*Mucuna pruriens*	Fabaceae	Mature seed
Winged bean *(Goa bean)*	*Psophocarpus tetragonolobus*	Fabaceae	Mature seed

D. Nuts and seeds

This group comprises mostly tree nuts but also includes groundnut (peanut) and may include certain seeds when consumed in substantial quantities. Defining "seeds" for inclusion in this category is challenging; see discussion below the table. In many cases, seeds should be included in category "U" (Condiments and seasonings).

This group also includes nut and seed "butters", such as pounded groundnut/peanut butter, cashew butter or sesame butter (tahini) when consumed in substantial amounts and not merely added to flavour mixed dishes.

Note that oils extracted from nuts and seeds are **not** included in this group; they are included in "Other oils and fats" (category "Q").

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Peanut/groundnut	*Arachis hypogaea*	Fabaceae	Pod/seed
Tree nuts			
Almond	*Prunus dulcis*	Rosaceae	Nut
Brazil nut	*Bertholletia excelsa*	Lecythidaceae	Nut
Cashew	*Anacardium occidentale*	Anacardiaceae	Nut
Chestnut	*Castanea*	Fagaceae	Nut
Filbert	*Corylus maxima*	Betulaceae	Nut
Hazelnut	*Corylus avellana*	Betulaceae	Nut
Macadamia nut	*Macadamia*	Proteaceae	Nut
Pecan	*Carya illinoinensis*	Juglandaceae	Nut
Pistachio	*Pistacia vera*	Anacardiaceae	Nut
Walnut	*Juglans*	Juglandaceae	Nut
Seeds			
Baobab seed *(monkey bread)*	*Adansonia*	Malvaceae	Seed
Chia seed	*Salvia hispanica*	Lamiaceae	Seed
Wild mango *(bush mango, dika, ogbono)*	*Irvingia gabonensis*	Irvingiaceae	Seed
Flaxseed	*Linum usitatissimum*	Linaceae	Seed
Hibiscus seed *(dried, may be fermented)*	*Hibiscus sabdariffa*	Malvaceae	Seed
Locust bean seeds *(néré; may be fermented; soumbala)*	*Parkia biglobosa*	Fabaceae	Seed
Melon seeds *(egusi)*	*Citrullus lanatus*	Cucurbitaceae	Seed
Pine nut *(piñon)*	*Pinus*	Pinaceae	Seed
Poppy seed	*Papaver somniferum*	Papaveraceae	Seed
Pumpkin seed *(pepita)*	*Cucurbita*	Cucurbitaceae	Seed
Sesame seed	*Sesamum indicum*	Pedaliacae	Seed
Shea butter seed/kernel	*Vitellaria paradoxa*	Sapotaceae	Seed
Sunflower seed	*Helianthus*	Asteraceae	Seed

Seeds

There are two issues in determining items to list as examples of seeds in row D of the questionnaire: the definition of seeds and the usual amount consumed.

In the botanical sense, seeds include a very broad range of items, including nuts, grains and legumes. But in culinary systems, there are usually a limited number of other seeds (i.e. not considered as nuts, grains or legumes), which are typically high in fat content and consumed as snacks or side dishes, in pastes, to season or garnish mixed dishes or to chew as a digestive.

For the purposes of this guide, the culinary definition of "seeds" excludes tree nuts, grains and legumes. A very wide range of seeds are foraged or cultivated and used in cuisines in many regions. It is not possible to provide a comprehensive list of seeds used as foods; the table above provides examples.

Because they are often consumed in very small quantities, most seeds should be listed on the questionnaire among the examples in the "Condiments and seasonings" row (category "U", below) of the questionnaire, not in the "Nuts and seeds" group, and enumerators should mark consumption in category "U".

However, seeds may be listed as examples in row D, "Nuts and seeds", if it is known that they are **usually** added as a substantial ingredient in local mixed dishes or if they are **usually** eaten as a substantial snack or side dish (see **Box 1** on page 13 for more detailed discussion of quantities). If there is uncertainty about quantities usually consumed, seeds should be classified with "Condiments and seasonings" to avoid inflating the proportion of women reported to consume this nutrient-dense food group.

The decision on where to place various types of seeds (and their products) on the questionnaire should be made during questionnaire adaptation.

E. Milk and milk products

This group includes almost all liquid and solid dairy products from cows, goats, buffalo, sheep or camels.

Milk and dairy products are often used as ingredients in mixed dishes or are added to other beverages. See **Boxes 1** and **3** (pages 13 and 21) for a discussion of ingredients used in mixed dishes. When milk or dairy products are added to mixed dishes, often the amount of dairy consumed in a serving of the mixed dish is small. Decisions on how to classify milk added in mixed dishes should be made during questionnaire adaptation. If there is uncertainty about quantities usually consumed, milk/dairy ingredients should **not** be classified in the "Milk and milk products" group (group "E") to avoid inflating the proportion of women reported to consume the nutrient-dense dairy group. Unless nutritionists involved in adaptation advise otherwise, classify as indicated here.

Items in this group include:

- Fresh whole, low-fat and skim milk when **drunk/consumed as such**
- Reconstituted powdered or evaporated milk or ultra-high temperature (UHT) (boxed) milk **consumed as such**
- Hard cheese (e.g. cheddar, mozzarella, Swiss, parmesan)
- Soft cheese (e.g. ricotta, cottage, paneer)
- Kefir
- Yoghurt/curd

Items **not** included in this group and classified into other categories:

- Butter, cream and sour cream: Classify with "Other oils and fats" (category "Q") because of their high fat content and most typical culinary uses.

- Cocoa drinks with milk: Classify with “Sugar-sweetened beverages” (category “T”).
- Ice cream: Classify with “Sweets” (category “S”).
- Processed/packaged yoghurt drinks: Classify with “Sugar-sweetened beverages” (category “T”), because these are usually high in sugar and low in dairy content.
- Sweetened condensed milk: Classify with “Sweets” (category “S”) if used as a food ingredient and with “Sugar-sweetened beverages” (category “T”) if diluted and consumed as a beverage.
- Tea or coffee with milk: Classify with “Other beverages and foods” (category “V”) if unsweetened and with “Sugar-sweetened beverages” (category “T”) if taken with sugar.

Note: The next three groups are separated into three rows on the questionnaire but are combined into one group for calculation of the MDD-W indicator.

F. Organ meat

This group includes different types of red organ meats that are usually rich in iron. Because of their high iron content, blood sausage and other blood products are also included.

- Blood sausage, other blood products
- Gizzard
- Heart
- Kidney
- Liver

Pale organ meats, such as tripe, are **not** included because the iron content is far lower. Tripe and other pale organ meat can be classified with “Meat and poultry” (group “G”).

G. Meat and poultry

All flesh meats from mammals, birds, reptiles and amphibians are included. Processed meats are also included.

- Beef, goat, lamb, mutton, pork, rabbit, yak, deer, antelope, buffalo or other large wild (bush meat) or domesticated mammals
- Tripe or other pale organ meats
- Cane rat, guinea pig, rat, agouti, opossum, cat, dog, anteater or other small wild (bush meat) or domesticated mammals
- Chicken, duck, goose, guinea fowl, turkey, pigeon or other wild or domesticated birds
- Crocodile, frog, snake and other reptiles and amphibians

There is increasing interest in and concern regarding consumption of red meat and processed meats (see, for example, Bouvard et al., 2015, and http://www.who.int/features/qa/cancer-red-meat/en/). In some settings, consumption of animal-source foods is very low, while in others it is consumed in excess of needs.

For the purposes of the MDD-W indicator, all flesh foods, including red meat and processed meat, are included in this group. However, in settings where there are public health concerns about excessive consumption and/or where processed meats are widely consumed, an additional row could be added to the questionnaire to disaggregate and capture descriptive information about specific types of meat of concern, i.e. to separate red meat and/or processed meat from other flesh foods.

H. Fish and seafood

This group includes fish and seafood from both marine and freshwater environments.

- Fresh, frozen or dried fish, large or small, all species
- Canned fish (e.g. anchovies, tuna and sardines)
- Clams, mussels, oysters and scallops (bivalves)
- Shrimp, lobster, crayfish and crabs (crustaceans)
- Edible sea urchins and sea cucumbers (echinoderms)
- Octopus, squid and cuttlefish
- Shark
- Whale

Fish roe and snails are **not** included and are classified with "Insects and other small protein foods" (category "O").

I. Eggs

This group includes all kinds of bird eggs.

- Chicken eggs
- Duck eggs
- Guinea fowl eggs
- Quail eggs

J. Dark green leafy vegetables

Essentially all medium-to-dark green leafy vegetables are vitamin A-rich (see **Box 2** on page 15 for criteria for classifying items as vitamin A-rich). Only very light leaves, such as iceberg lettuce, are not. Commonly consumed leaves include many wild and foraged species, as well as the green leaves of food crops. In the absence of information on nutrient content, wild/foraged leaves that are medium-to-dark green can be assumed to be vitamin A-rich and placed in this group.

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Alfalfa greens	*Medicago sativa*	Fabaceae	Leaves
Amaranth greens *(bugga, kiwicha, dodo)*	*Amaranthus*	Amaranthaceae	Leaves
Arugula *(rocket, rúcula, oruga)*	*Eruca sativa*	Brassicaceae	Leaves
Baobab greens	*Adansonia*	Malvaceae	Leaves
Bean greens	*Phaselus mungo*	Papilinaceae	Leaves
Beet greens *(Swiss chard, silverbeet, perpetual spinach, crab beet, mangold)*	*Beta vulgaris*	Chenopoidiaceae	Leaves
Bitter leaf *(ewuro, ndole, onugbu)*	*Vernonia calvoana*	Asteraceae	Leaves
Bitter melon greens	*Momordica charantia*	Cucurbitaceae	Leaves
Broccoli	*Brassica oleracea*	Brassicaceae	Leaves and head (flower buds)
Broccoli rabe *(rappi, broccoletti)*	*Brassica rapa*	Brassicaceae	Leaves
Carrot greens	*Daucus carota*	Umbelliferae	Leaves
Cassava greens	*Manihot esculenta*	Euphotbiaceae	Leaves
Chicory greens	*Cichorium intybus*	Asteraceae	Leaves
Chili greens	*Capsicum frutescens*	Solanaceae	Leaves

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Chinese cabbage *(bok choy, pak choy)*	*Brassica rapa*	Brassicaceae	Leaves
Collard greens *(Chinese kale, Chinese broccoli, gai-lan/kai-lan)*	*Brassica oleracea*	Brassicaceae	Leaves
Cowpea greens	*Vigna unguiculata*	Paplionaceae	Leaves
Dandelion greens	*Taravacum*	Asteraceae	Leaves
Drumstick greens *(moringa)*	*Moringa oleifera*	Moringaceae	Leaves
Endive	*Cichorium endivia*	Asteraceae	Leaves
Fenugreek greens *(methi)*	*Trigonella foenum*	Fabaceae	Leaves
Fiddlehead fern *(dod)*	*Pteridium aquilinum*	Dennstaedtiaceae	Leaves
Garden cress *(pepper grass)*	*Lepidium sativum*	Brassicaceae	Leaves
Kale *(spring greens)*	*Brassica oleracea*	Brassicaceae	Leaves
Lamb's quarters *(bathua)*	*Chenopodium alba*	Chenopodiaceae	Leaves
Lettuce *(bibb, romaine)*	*Lactuca sativa*	Asteraceae	Leaves
Malva greens *(mallow)*	*Malva vertcillata*	Malvaceae	Leaves
Mustard greens	*Sinapsis alba*	Brassicaceae	Leaves
Okra greens *(lady's finger, gumbo)*	*Abelmoschus esculentus*	Malvaceae	Leaves
Pumpkin greens	*Cucurbeta pepo*	Cucurbitaceae	Leaves
Purslane	*Portulaca oleracea*	Portlacaceae	Leaves
Quinoa greens *(quinua)*	*Chenopodium quinoa*	Amaranthaceae	Leaves
Spinach	*Spinous oleracea*	Amaranthaceae	Leaves
Sweet potato leaves	*Ipomoea batatas*	Convolvulaceae	Leaves
Tannia greens	*Xanthosoma*	Araceae	Leaves
Taro greens	*Colocasia esculenta*	Araceae	Leaves
Turnip greens	*Brassica rapa*	Brassicaceae	Leaves
Watercress	*Nasturtium officinale*	Brassicaceae	Leaves
Water spinach *(swamp cabbage, water morning-glory, kangkung, kang kung)*	*Ipoemoea aquatica*	Convolvulaceae	Leaves
Yau choy	*Brassica napus*	Brassicaceae	Leaves

Note: The next two groups ("Vitamin A-rich vegetables, roots and tubers" and "Vitamin A-rich fruits") are separated into two rows on the questionnaire but are combined into one group for calculation of the MDD-W indicator.

K. Vitamin A-rich vegetables, roots and tubers

Include only roots, tubers and other red/yellow/orange vegetables that are sources of vitamin A (see **Box 2** on page 15). Several items that are botanically fruits but are typically used as vegetables for culinary purposes are included here.

Common name	*Binomial name OR genus*	Family	Edible part of the plant
Carrot	*Daucus carota*	Umbelliferae	Tuberous root
Pumpkin	*Cucurbita pepo*	Cucurbitaceae	Fruit
Red pepper *(sweet)*	*Capsicum annuum*	Solanaceae	Fruit
Squash *(orange- or dark yellow-fleshed only)*	*Cucurbita*	Cucurbitaceae	Fruit
Sweet potato *(orange- or dark yellow-fleshed only)*	*Ipomoea batatas*	Convolvulaceae	Tuberous root

L. Vitamin A-rich fruits

In addition to the examples in the table below, include any other locally available dark yellow or orange fruits that are sources of vitamin A (see **Box 2**).

Note: Certain fruits (e.g. mango and papaya) are high in vitamin A when ripe, but not when eaten "green" or unripe. When they are eaten "green" (unripe), mango and papaya should be classified with "Other fruits" (group "N"). If appropriate, these fruits should be listed as "ripe" in this row of the questionnaire and as "green" in the "Other fruits" row. In this situation, enumerators should be trained on this point.

Certain varieties of ripe, deep yellow- or orange-fleshed bananas are also rich in vitamin A, but white/cream-fleshed bananas are not. Deep yellow- and orange-fleshed bananas may be classified with vitamin A-rich fruits when their high vitamin A content is known to survey planners **and** it is considered feasible to distinguish bananas by colour during fieldwork. Otherwise, all bananas should be classified with "Other fruits" (group "N"), to avoid inflating the proportion of women reported to consume vitamin A-rich foods.

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Apricot *(fresh and dried)*	*Prunus armeniaca*	Rosaceae	Fruit
Cantaloupe melon *(ripe)*	*Cucumis melo*	Cucurbitaceae	Fruit
Hog plum	*Spondias mombin*	Anacardiaceae	Fruit
Locust bean fruit/pulp	*Parkia biglobosa*	Fabaceae	Fruit
Loquat	*Eriobotrya japonica*	Rosaceae	Fruit
Mango *(ripe, fresh and dried)*	*Mangifera indica*	Anacardiaceae	Fruit
Musk melon	*Cucumis melo*	Cucurbitaceae	Fruit
Papaya *(ripe, fresh and dried)*	*Carica papaya*	Caricaceae	Fruit
Passion fruit *(ripe)*	*Passiflora edulis*	Passifloracceae	Fruit
Peaches *(dried or raw)*	*Prunus persica*	Rosaceae	Fruit
Persimmon *(ripe)*	*Diospyros kaki*	Ebenaceae	Fruit
Pitanga *(Surinam cherry, Brazilian cherry)*	*Eugenia uniflora*	Myrtaceae	Fruit
Red palm fruit, red palm pulp	*Elaeis guineensis*	Arecaceae	Fruit
Tree tomato *(tamarillo)*	*Solanum betaceum*	Solanaceae	Fruit

M. Other vegetables

In general, the "Other vegetables" group follows the culinary definition of a vegetable and not the botanical definition. It includes stems, fruits and flowers of plants when generally consumed in savoury dishes and considered as vegetables in culinary systems. So, for example, cucumber, tomato and okra (all fruits in botanical terms) are included as "Other vegetables".

This group includes legumes when the fresh/green pod is consumed (as in fresh peas, snow peas, snap peas or green beans).

This group does **not** include high-carbohydrate "starchy" roots and tubers, such as white potatoes, white yams, cassava and cocoyam, which are classified in the "White roots and tubers and plantains" group (group "B").

As with dark green leafy vegetables, commonly consumed vegetables vary widely with geography and can include foraged as well as cultivated foods. The following table provides a long list of examples, but other local vegetables can also be classified in this group.

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Artichoke	*Cynara cardumculus*	Asteraceae	Fleshy bracts
Asparagus	*Asparagus officinales*	Asparagaceae	Young shoots
Bamboo shoots	*Bambusavulgaris*	Poaceae	Young stem
Beans (various) when eaten as fresh pods[a]	*Phaseolus, others*	Fabaceae	Young pod
Beets	*Beta vulgaris*	Chenopodiaceae	Root
Bitter melon	*Momordica charantia*	Cucurbitaceae	Fruit
Brussels sprouts	*Brassica oleracea*	Brassicaceae	Fleshy bracts
Cabbage *(common and red varieties)*	*Brassica oleracea*	Brassicaceae	Leaves
Caigua *(caihua, slipper gourd)*	*Cyclanthera pedata*	Cucurbitaceae	Fruit
Cattail	*Typha*	Typhaceae	Rhizome
Cauliflower	*Brassica oleracea*	Brassicaceae	Head (thalamus and flower buds)
Celery	*Apium graveolens*	Apiaceae	Leaf stalk
Ceylon spinach	*Basella alba*	Basellaceae	Succulent leaves
Chayote *(sayote, tayota, choko, chocho, chow-chow, christophine)*	*Sechium edule*	Cucurbitaceae	Fruit
Corn *(fresh, not dried/flour/meal) (green maize)*	*Zea mays*	Poaceae	Corn cobs, kernels
Cucumbers	*Cucurbita Species*	Cucurbitaceae	Fruit
Eggplant *(aubergine, brinjal)*	*Solanum melongena*	Solanaceae	Fleshy fruit
Fennel	*Foeniculum vulgare*	Apiaceae	Bulb, stem, leaves
Green pepper	*Capsicum annum*	Solanaceae	Fruit
Jicama *(yam bean)*	*Pachyrhizus erosus*	Fabaceae	Tuberous root
Kohlrabi *(German turnip)*	*Brassica oleracea*	Brassicaceae	Stem
Leek	*Allium ampeloprasum*	Alliaceae	Stem/leaf sheaths
Lettuce *(light green)*	*Lactuca sativa*	Asteraceae	Leaves
Luffa *(rigged gourd)*	*Luffa acutangula*	Cucurbitaceae	Fruit
Mushroom	*Agaricus bisporus*	Agaricaceae	Stem and cap
Nakati *(mock tomato)*	*Solanum aethiopicum*	Solanaceae	Leaves
Okra	*Abelmoschus esculentus*	Malvaceae	Green fruit
Onion	*Alleum cepa*	Liliaceae	Bulb
Palm hearts *(palmito, chonta, swamp cabbage)*	*Bactris gasipaes*	Arecaceae	Inner core
Parwal *(pointed gourd)*	*Trichosanthes dioica*	Cucurbitaceae	Fruit
Peas, green, when eaten as fresh pod	*Pisum sativum*	Fabaceae	Young pod
Radish	*Raphanus sativus*	Brassicaceae	Tuberous root
Snake gourd *(serpent gourd, chichinga, and padwal)*	*Trichosanthes cucumerina*	Cucurbitaceae	Fruit
Squash *(summer and other light-coloured squash)*	*Cucurbita maxima*	Cucurbitaceae	Fruit
Tomatillo	*Physalis philadelphica*	Solanaceae	Fruit
Tomato	*Solanum lycopersicum*	Solanaceae	Fruit
Winter melon *(white gourd, ash gourd)*	*Benincasa hispida*	Cucurbitaceae	Fruit
Zucchini	*Cucurbita pepo*	Cucurbitaceae	Fruit

[a] Various varieties of young bean pods are eaten as vegetables; please refer to the "Pulses (beans, peas and lentils)" group (group "C") for a list of many varieties. All the varieties of bean consumed as a young pod should be included in this category. When only mature seeds are eaten (fresh or dried), they should be listed under group "C".

N. Other fruits

This group includes most fruits, excluding vitamin A-rich fruits (group "L") and starchy fruits, such as plantain (group "B"). As with "Other vegetables", this group follows the culinary definition of fruits and so does not include tomatoes, etc., as explained above. As with vegetables, commonly consumed fruits vary widely with geography and can include foraged as well as cultivated fruits.

This group includes fresh and dried fruits but does **not** include sugar-sweetened processed fruit products; these should be classified with "Sweets" (category "S") or sugar-sweetened beverages (category "T").

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Acerola *(West Indian cherry)*	*Malpighia glabra*	Malpighiaceae	Fruit
Apple	*Malus domestica*	Rosaceae	Fruit
Avocado	*Persea americana*	Lauraceae	Fruit
Banana	*Musa indica*	Musaceae	Fruit
Baobab fruit *(monkey bread)*	*Adansonia*	Malvaceae	Fruit
Blackberry	*Rubus fruticosus*	Rosaceae	Fruit
Black current	*Ribes nigrum*	Grassulariaceae	Fruit
Blueberry	*Vaccinium*	Ericaceae	Fruit
Cactus pear	*Opuntia*	Cactaceae	Succulent stem
Cape gooseberry *(ground cherry, golden berry)*	*Physalis peruviana*	Solanaceae	Fruit
Cashew fruit *(cashew apple, tupi)*	*Anacardium occidentale*	Anacardiaceae	Fruit
Cherries *(cornelian)*	*Corneus*	Cornaceae	Fruit
Coconut flesh	*Cocos nucifera*	Arecaceae	Fruit
Cranberry	*Vaccinium*	Ericaceae	Fruit
Dates *(fresh and dried)*	*Phoenix dactyfera*	Arecaceae	Fruit
Durian	*Durio*	Malvaceae	Fruit
Elderberry	*Sambucus*	Adoxaceae	Fruit
Figs *(sycamore)*	*Ficus*	Moraceae	Fruit
Gooseberry	*Ribes species*	Grassulariaceae	Fruit
Grapefruit	*Citrus paradisi*	Rutaceae	Fruit
Grapes	*Vitis*	Vitaceae	Fruit
Guava	*Psidum*	Myrtaceae	Fruit
Guinep *(chenette, genip)*	*Mamoncillo/Mellicoccus*	Sapindaceae	Fruit
Honeydew melon	*Cucunis melo*	Cucurbitaceae	Fruit
Huckleberry	*Vaccinium*	Ericaceae	Fruit
Indian gooseberry *(amla)*	*Ribes crispa*	Saxifragales	Fruit
Jackfruit *(kathal)*	*Artocarpus heterophyllus*	Moraceae	Fruit
Jujube	*Ziziphus jujuba*	Rhamnaceae	Fruit
June plum *(Jew plum, golden apple)*	*Spondias dulcis*	Anacardiaceae	Fruit
Kiwi	*Actinidia deliciosa*	Actinidiaceae	Fruit
Lemon	*Citrus limon*	Rutaceae	Fruit
Lime	*Citrus aurantifolia*	Rutaceae	Fruit
Litchi	*Litchi chinensis*	Sapindaceae	Fruit
Mandarin orange	*Citrus reticulate*	Rutaceae	Fruit

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Mulberry	*Morus nigra*	Moraceae	Fruit
Nectarine	*Prunus persica*	Rosaceae	Fruit
Orange	*Citrus sinesis*	Rutaceae	Fruit
Peach	*Prunus persica*	Rosaceae	Fruit
Pear	*Pyrus communis*	Rosaceae	Fruit
Pineapple	*Ananas*	Bomeliaceae	Fruit
Plum	*Prunus*	Rosaceae	Fruit
Pomegranate *(anar)*	*Punica granatum*	Luthraceae	Fruit
Pomelo	*Citrus grandis*	Rutaceae	Fruit
Pomerac *(Malay apple)*	*Syzigium malaccense*	Myrtaceae	Fruit
Prune	*Prunus domesticus*	Rosaceae	Fruit
Quince	*Cydonia oblongata*	Rosaceae	Fruit
Rambutan	*Nephelium lappaceum*	Sapindaceae	Fruit
Raspberry	*Rubus*	Rosaceae	Fruit
Sapodella *(naseberry)*	*Manikara zapota*	Sapotaceae	Fruit
Soursop *(guanábana, graviola)*	*Annona muricata*	Annonaceae	Fruit
Star fruit *(kamrakh)*	*Averrhoa*	Oxalidaceae	Fruit
Strawberry	*Prunus*	Rosaceae	Fruit
Sweetsop *(sugar apple, custard apple)*	*Annona squamosa*	Annonaceae	Fruit
Tamarind	*Tamarindus indica*	Caesalpinioideae	Fruit
Tangerine	*Citrus tangerina*	Rutaceae	Fruit
Watermelon	*Citrullus lanatus*	Cucurbitaceae	Fruit
Yacon	*Smallanthus sonchifolius*	Asteraceae	Fruit

Note: The next six categories are optional food categories. A decision on including these categories should be taken by survey designers early in the adaptation process (see Section 4).

O. Insects and other small protein foods

This group includes a very wide variety of insects and other small protein foods. With an estimate of more than 2,000 insect species alone (Rumpold and Schlüter, 2013), it is not possible to provide a comprehensive list.

Items in this group include:

- Fish roe
- Insects
- Insect eggs
- Insect larvae/grubs
- Snails
- Spiders
- Any other small invertebrates

This category does **not** include frogs, snakes or other reptiles and amphibians, which are included in the "Meat and poultry" group (group "G").

If these foods are not eaten or are considered very rare throughout the survey area, this category does not need to be included on the questionnaire.

P. Red palm oil

This category includes only red palm oil, which is usually consumed as an ingredient in mixed dishes. Note that the oily red palm fruit is classified with "Vitamin A-rich fruits" (group "L"). In areas where grown, the oil and/or the oily fruit may be consumed, depending on the particular mixed dish.

If red palm oil is not available, not consumed or considered very rare throughout the survey area, this category does not need to be included on the questionnaire.

Q. Other oils and fats

This category includes all solid and liquid oils and fats other than red palm oil, including those of plant or animal origin:

- Butter
- Cream
- Ghee
- Lard, suet, tallow (animal fats)
- Margarine, shortening (hydrogenated vegetable oil)
- Mayonnaise
- Palm oil (not red palm oil)
- Sour cream
- Vegetable/fruit/nut/seed oils (e.g. oils made from canola, coconut, cottonseed, groundnut, maize, olives, rapeseed, safflower, sesame, soybean, sunflowers and walnuts)
- Any other oil extracted from a nut, seed or grain

Note: In many surveys, some or all of the respondents will not know the type of oil consumed. Labelling is insufficient and/or oils are locally produced, unlabelled or repackaged into unlabelled container or sachets. Oils can still be classified into this category as "Other oil or fat".

R. Savoury and fried snacks

This optional category will include different foods in different settings. There is currently no consensus and no standard approach to data collection on this category of food. However, there is growing interest in gathering information on nutrient-poor and/or energy-dense foods that are often consumed as snacks. This category includes highly processed commercial products but also a variety of processed "street foods".

Examples include:

- Cassava chips, fried cassava balls, other cassava-based fried snacks
- Corn/maize chips/fried tortilla strips
- Crisps
- Potato chips
- Sweet potato chips
- Puffs (cheese puffs, corn/maize puffs, other "puffs")
- Doughnuts/fried dough/"fry bread"
- Samosas
- Other deep-fried, mainly carbohydrate, snack foods

Note: Some of these items (e.g. samosas) may include small amounts of meat or vegetables but are high in fat and simple carbohydrate and often may be high in sodium as well.

Other fried foods, such as fried potatoes and fried plantains, which may be consumed as meals or snacks, are classified with roots and tubers (group "B") because in some settings potatoes or

plantains are staple foods and classifying them with snacks might mean there would be no staple food in the count. This could result in a false "deflation" of food group diversity. Depending on their role in local diets, survey objectives and the likelihood of this false deflation, survey designers could choose to also classify fried potatoes, fried plantains and similar food in the "Savoury and fried snacks" category.

S. Sweets

As with category "R", there is no consensus and no standard approach to data collection on "sweets", but there is interest in capturing descriptive information on consumption. This category includes highly processed commercial products but also a variety of locally produced and processed snacks and "street foods".

Include all food items with a high content of different sweetening agents (e.g. sugar, corn syrup, other syrup, honey, molasses or jaggery), such as:

- Baklava
- Biscuits (sweet)
- Cakes
- Candies (hard candies, toffees, "milk toffees" or candies made with sweetened condensed milk, any other candies)
- Chocolates
- Coconut candies and sweet biscuits, and other sweetened coconut snacks
- Cookies
- Frozen custard/frozen yoghurt
- Fruit canned in sugar syrup
- Fruit "gummy" candies, fruit "leathers"
- Ice cream
- Halwa
- Honey
- Jam
- Marmalade
- Pastries (sweet, fried or baked)
- Pie
- Sesame seed candies
- Sweetened condensed milk
- Any other sweets

T. Sugar-sweetened beverages

This category includes all sugar-sweetened beverages, with any/all other ingredients. Examples include:

- Chocolate drinks, fortified and unfortified, both pre-packaged fluid drinks and powders
- Coffee with sugar
- "Energy drinks"
- Fruit drinks, sweetened fruit juices
- Malt drinks, fortified and unfortified
- Soft drinks/sodas/carbonated or "fizzy drinks", including colas, fruit flavours and other flavours
- Tea with sugar
- Any other drink sweetened with sugar, corn syrup, honey or other sweetener

Note: Include sweet drinks here even if they have some dairy content.

Note: The next and final two categories are REQUIRED food categories.

U. Condiments and seasonings

This category includes all minor ingredients in mixed dishes, which primarily provide flavour and would be consumed in very small amounts in any individual serving of the dish. It includes items added at any stage of cooking or when serving food (e.g. garnishes sprinkled on top of a dish to add flavour or visual appeal).

It is not possible to provide a complete listing of such items globally, but the examples listed here should help guide users in populating this category:

- Bean paste, fermented bean paste
- Bouillon cubes, flavour cubes
- Chili peppers (hot)
- Chives
- Dried soup seasoning packets
- Fish powder
- Fish sauce
- Garlic
- Ginger root
- Horseradish
- Herbs, dried and fresh, all types
- Ketchup (“catsup”)
- Lemon or lime or other juice, added to “bring up flavour” of mixed dishes
- Monosodium glutamate (MSG) and flavour products made with MSG
- Mustard
- Pepper sauce
- Seeds or seed pastes, when used to flavour or garnish a dish (see list of seeds in “Nuts and seeds”, group “D”)
- Soy sauce, tamari
- Spices, dried and fresh, all types
- Sugar, when added to flavour a mixed dish
- Tomato paste
- Any other seasoning or flavouring added during cooking
- Any garnish added at the end of cooking or when serving (e.g. grated cheese, grated vegetable, seeds or legumes)

V. Other beverages and foods

This miscellaneous category includes all food and beverage items not in groups "A"–"U". When survey designers choose not to include any or all of the six optional categories (categories "O"–"T"), then examples from those categories should also be listed in the questionnaire row in this category, so that enumerators know where to mark those foods (e.g. insects, fats and oil, savoury snacks, sweets and sugar-sweetened beverages).

Items always categorised here include:

- Alcohol, all types
- Chutney or pickle (British)
- Clear broth, soup broth
- Coffee, with or without milk, if unsweetened
- Herbal beverages/infusions
- Olives
- Pickled cucumbers
- Tea, with or without milk, if unsweetened
- Any other food or beverage not included in previous groups/categories

Note: Olives and pickles are listed here because they are usually consumed in small quantities, to the side of or to accent main dishes. Even if eaten in larger quantities, because olives and pickles are usually high in sodium, they are not similar to other fruits and vegetables. Chutney or pickle (British) is also eaten to the side or as a garnish. All these items could also be classified as "Condiments or seasonings" if that is a better fit locally. In either case, they should not be classified into an MDD-W food group.

Classification challenges

Table A2-1 presents some food classification challenges. While there are no perfect solutions to some challenges, standardisation in classification can help ensure comparability between surveys, and in general we recommend a standard approach to these difficult choices. Three types of items present challenges or uncertainties: items that are unusual for a group (e.g. several high-fat fruits), items that contain multiple ingredients but that are considered a single food (e.g. bread) and items that are often consumed in small quantities.

The classification decisions in this table follow two principles. When necessary:

- Err on the side of not falsely inflating food group diversity
- Err on the side of simplicity when a single ingredient usually dominates in a food or is most likely to dominate in lower-cost versions of the food

Table A2-1. How to classify problem foods

Problem foods	Questionnaire category and comments
Avocado	"Other fruits"
Biofortified foods	Classify as a "natural" food and, if desired, design additional questions to capture information on consumption of biofortified crops or varieties. For example, biofortified maize should be classified with "Foods made from grains" for the purposes of Minimum Dietary Diversity for Women of Reproductive Age (MDD-W).
Blended fortified foods, such as corn-soy blend, wheat-soy blend, donated commodities or local blends/fortified cereals	Classify with main ingredient (usually grain). It is also advisable to add separate questions to capture coverage of fortified foods if this is of interest to the survey designers.
Bread	"Foods made from grains"
Chili peppers, red and green	"Condiments and seasonings"
Clear broth	"Other beverages and foods"
Coconut flesh	"Other fruits"
Coconut milk[a]	"Condiments and seasonings" or "Other oils and fats"
Coconut water	"Other beverages and foods"
Coffee, sweetened, with or without milk or cream	"Sugar-sweetened beverages". Though the amount of milk or cream can vary and be high, very often it is not, and this classification is intended to avoid the risk of falsely inflating the proportion of women reported to consume the nutrient-dense dairy group.
Coffee, unsweetened, with or without milk or cream	"Other beverages and foods". Rationale as above.
Doughnuts (fried dough)	"Savoury and fried snacks"
Dried soup seasoning packets	"Condiments and seasonings". These may be rehydrated and consumed as a main dish in a meal, but are not very different nutritionally from bouillon cubes. They are typically high in sodium and, if they contain dried vegetables, the amounts are typically very small, particularly for lower-cost products.
Fish powder	"Condiments and seasonings"
Fortified foods and products	Classify as if unfortified and, if desired, design additional questions to capture information on consumption of fortified foods or products. For example, fortified oil should be classified with "Other oils and fats".
Fruit juices (100% fruit)	If it is known that 100% fruit juice is commonly consumed **and** if survey designers consider it is feasible to train enumerators to probe and distinguish this from sugar-sweetened juice, this can be placed in the "Other vitamin A-rich fruits and vegetables" (e.g. mango juice) or "Other fruits" group, depending on the type of fruit. If this is not certain or not feasible, all juices should be placed in the "Sugar-sweetened beverages" category.
Fruits, canned with sugar syrup	"Sweets"
Garlic	"Condiments and seasonings"
Herbs	"Condiments and seasonings"

[a] This food is not part of any of the MDD-W groups, so this classification choice does not affect the indicator. In some areas (particularly poor rural areas), coconut milk may be the predominant fat source in the diet, and there may be an interest in including this in the "Other oils and fats" category. In other areas, particularly where coconut milk is typically made very thin with water, it is more appropriate to consider in the "Condiments and seasonings" category.

Problem foods	Questionnaire category and comments
Olives	"Other beverages and foods"
Palm fruit	"Other vitamin A-rich fruits and vegetables". Note that this may be referred to as "palm nut" in some cuisines because the entire pulp-covered kernel is cooked in stews. It is the oily flesh/pulp of the fruit that is high in vitamin A.
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".
Snails	"Insects and other small protein foods"
Street foods/other mixed foods prepared outside the home	Probe for main ingredients and record as for mixed dishes. If mainly one ingredient, place in category for main ingredient (e.g. porridges, rice dishes in "Foods made from grain"). If fried snacks, place in category for "Savoury and fried snacks".
Sugar added to mixed dishes	"Condiments and seasonings". The questionnaire is not designed to capture total intake of free sugars. This is not feasible in a simple food group recall. It does capture prevalence of consumption of two categories of interest: sugar-sweetened beverages and items that are commonly considered as sweets (cakes, candies, etc.).
Sweetened condensed milk	"Sweets" if boiled and served as a sweet; "Sugar-sweetened beverages" if diluted and consumed as a drink.
Sweet drinks with milk (e.g. drinks made with milk and chocolate powder, including fortified powders; sweet tea or coffee with milk)	"Sugar-sweetened beverages". Though such drinks will provide varying amounts of dairy, they are classified as sugar-sweetened beverages to avoid the risk of falsely inflating the proportion of women reported to consume the nutrient-dense dairy group because often the amount of dairy is small.
Tea, sweetened, with or without milk	"Sugar-sweetened beverages". Rationale as for coffee.
Tea, unsweetened, with or without milk	"Other beverages and foods". Rationale as above.
Tomato paste	"Condiments and seasonings"
Vegetable juices (100%)	The issue is the same as for fruit juices. If 100% vegetable juice is commonly consumed **and** survey designers consider it is feasible to train enumerators to probe and distinguish this from sugar-sweetened juice, this can be placed in the "Other vitamin A-rich fruits and vegetables" (e.g. carrot juice) or "Other vegetables" group, depending on the type of vegetable. If this is not certain or not feasible, all juices should be placed in the "Sugar-sweetened beverages" category.

[b] RE = retinol equivalents

Appendix 3. Alternative method for collecting information on food groups consumed – the list-based method

The Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) guide to measurement details how to collect food group dietary diversity information from women of reproductive age (WRA) in a survey using an open recall. This appendix describes an alternative method for gathering information about foods consumed when it is not practical to carry out an open recall.

The open recall elicits information by guiding the respondent through an "open recall" of foods and beverages consumed the previous day and night. The recall is organized by time (starting the previous morning) and is intuitive for respondents.

The alternative "list-based" method instead asks the respondent to report if she has consumed any foods during the previous day and night from each of the food categories. The enumerator reads out loud a list of example food items for each category (as written in the "description/examples" column of the questionnaire). The respondent must mentally shift back and forth in time and mentally "decompose" mixed dishes to respond correctly when lists of foods, in groups, are read to her.

Additional advantages and disadvantages of the open recall and list-based methods are described in detail in **Section 1** of this guide (see **Table 2** on page 7).

In summary, the open recall makes fewer cognitive demands on the respondent and for this reason may result in more accurate recalls. However, correct administration of an open recall requires more enumerator capacity and training. The time required for administering each type of questionnaire varies depending on the complexity of the local diet. The open recall tends to be less tedious for enumerators and respondents.

The alternative MDD-W model questionnaire to use for the list-based method is shown below, along with suggested enumerator instructions and text to read to the respondent.

Order of food groups/categories

Note that the order of the food group categories in this version differs from the MDD-W model questionnaire presented in **Section 3** of this guide. This is to avoid the situation where a respondent replies "yes" to the roots and tubers question when she has in fact consumed a vitamin A-rich orange- or yellow-fleshed sweet potato. By placing the "special" category of orange-fleshed roots, tubers and vegetables before the general category of roots and tubers, this problem is avoided. The other vegetable categories are also moved up in the sequence to avoid a gap in time before querying about "other" vegetables. This aims to avoid the possibility of double-counting items like carrots and orange-flesh sweet potatoes (i.e. having the respondent say "yes" for both categories when only one item, such as carrot, was consumed).

Changing the number of rows on the list-based questionnaire

In the list-based method, unlike in the open recall, responses and the resulting "count" of food groups are influenced by the total number of categories and by the choices made in disaggregating categories. In general, the larger the number of questions (rows) on a list-based questionnaire, the larger the number of "yes" responses, which in some cases leads to a higher count among the ten MDD-W food groups.

Ideally if users wish to compare across time or space, the list-based questionnaires should remain the same/have the same number of questions. However, it is allowable to add questions to capture information about one or several specific, targeted food items, but additions should be few and made thoughtfully to avoid biases in responses and in the constructed indicator.

Other steps in questionnaire adaptation

Please note that the steps described in **Section 4** for adapting the food lists should also be taken when using the list-based method.

MDD-W alternative questionnaire using a list-based data collection method

Enumerator instructions

Begin by reading the introductory portion of the questionnaire slowly, emphasising that the question concerns what the woman drank or ate yesterday during both the day and night. Then ask about each of the food group categories and provide examples of foods belonging to them in the order that they appear in the questionnaire. Mark '1' for "yes" if any item in a category was consumed and "no" if the woman reports she did not consume items in the category.

The following script can be included on the questionnaire or on a job aid/guidance sheet to be carried by the enumerator.

To be read to the respondent:

> *Now I'd like to ask you about foods and drinks that you ate or drank yesterday during the day or night, whether you ate it at home or anywhere else.*
>
> *I am interested in whether you had the food items I will mention even if they were combined with other foods. For example, if you had a soup made with carrots, potatoes and meat, you should reply "yes" for each of these ingredients when I read you the list. However, if you consumed only the broth of a soup, but not the meat or vegetable, do not say "yes" for the meat or vegetable.*
>
> *As I ask you about foods and drinks, please think of foods and drinks you had as snacks or small meals as well as during any main meals. Please also remember foods you may have eaten while preparing meals or preparing food for others.*
>
> *Please do not include any food used in a small amount for seasoning or condiments (like chilies, spices, herbs or fish powder). I will ask you about those foods separately.*

Model list-based questionnaire

Yesterday during the day or at night, did you eat or drink:

	Food categories	Description/examples to be adapted Consult **Appendix 2** and replace the example foods below with items commonly consumed in the survey area(s).	Consumed Yes = 1 No = 0
A	**Any foods made from grains, like:**	*Porridge, bread, rice, pasta/noodles or other foods made from grains*	___yes (1) ___no (0)
B	**Any vegetables or roots that are orange-coloured inside, like:**	*Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside [see **Appendix 2** for other less-common vitamin A-rich vegetables]*	___yes (1) ___no (0)
C	**Any white roots and tubers or plantains, such as:**	*White potatoes, white yams, manioc/cassava/yucca, cocoyam, taro or any other foods made from white-fleshed roots or tubers, or plantains*	___yes (1) ___no (0)
D	**Any dark green leafy vegetables, such as:**	*List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves*	___yes (1) ___no (0)
E	**Any fruits that are dark yellow or orange inside, like:**	*Ripe mango, ripe papaya [see **Appendix 2** for other less-common vitamin A-rich fruits]*	___yes (1) ___no (0)
F	**Any other fruits**	*List examples of any other fruits*	___yes (1) ___no (0)
G	**Any other vegetables**	*List examples of any other vegetables*	___yes (1) ___no (0)
H	**Any meat made from animal organs, such as:**	*Liver, kidney, heart or other organ meats or blood-based foods, including from wild game*	___yes (1) ___no (0)
I	**Any other types of meat or poultry, like:**	*Beef, pork, lamb, goat, rabbit, wild game meat, chicken, duck, other birds*	___yes (1) ___no (0)
J	**Any eggs**	*Eggs from poultry or any other bird*	___yes (1) ___no (0)
K	**Any fish or seafood, whether fresh or dried**	*Fresh or dried fish, shellfish or seafood*	___yes (1) ___no (0)
L	**Any beans or peas, such as:**	*Mature beans or peas (fresh or dried seed), lentils or bean/pea products, including hummus, tofu and tempeh*	___yes (1) ___no (0)
M	**Any nuts or seeds, like:**	*Any tree nut, groundnut/peanut, or certain seeds or nut/seed "butters" or pastes*	___yes (1) ___no (0)
N	**Any milk or milk products, such as:**	*Milk, cheese, yoghurt or other milk products, but NOT including butter, ice cream, cream or sour cream*	___yes (1) ___no (0)

Other food categories, not included in construction of MDD-W

Optional; inclusion to be determined by survey designers during adaptation process

Yesterday during the day or at night, did you eat or drink:

	Food categories	Description/examples to be adapted Consult **Appendix 2** and replace the example foods below with items commonly consumed in the survey area(s).	Consumed Yes = 1 No= 0
O	**Any insects or other small protein foods, including:**	*Insects, insect larvae/grubs, insect eggs and land and sea snails*	___ yes (1) ___ no (0)
P	**Any red palm oil**	*Red palm oil*	___ yes (1) ___ no (0)
Q	**Any oils and fats**	*Oil, fats or butter added to food or used for cooking, including extracted oils from nuts, fruits and seeds, and all animal fat*	___ yes (1) ___ no (0)
R	**Any savoury and fried snacks, such as:**	*Crisps and chips, fried dough, other fried snacks*	___ yes (1) ___ no (0)
S	**Any sweets, such as:**	*Sugary foods, such as chocolates, candies, cookies/sweet biscuits and cakes, sweet pastries or ice cream*	___ yes (1) ___ no (0)
T	**Any sugar-sweetened beverages, like:**	*Sweetened fruit juices and "juice drinks", soft drinks/fizzy drinks, chocolate drinks, malt drinks, yoghurt drinks, sweet tea or coffee with sugar*	___ yes (1) ___ no (0)

Required

	Food categories	Description/examples to be adapted Consult **Appendix 2** and replace the example foods below with items commonly consumed in the survey area(s).	Consumed Yes = 1 No= 0
U	**Any condiments and seasonings, such as:**	*Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds*	___ yes (1) ___ no (0)
V	**Any other beverages and foods**[a] ***(optionally, specify if not listed)***	*Tea or coffee if not sweetened, clear broth, alcohol* *Pickles, olives and similar* _____	___ yes (1) ___ no (0)

[a] If rows O, P, Q, R, S and/or T are not included, examples for the "Other beverages and foods" category must be expanded to include these types of items.

The final two rows ("Condiments and seasonings" and "Other beverages and foods") should always be included on the questionnaire.

Appendix 4. Comparing Minimum Dietary Diversity for Women of Reproductive Age and Infant and Young Child Feeding Minimum Dietary Diversity

Both the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) indicator and the Infant and Young Child Feeding Minimum Dietary Diversity (IYCF MDD) indicator are dichotomous indicators based on consumption of a number of food groups the previous day or night.

Since some users may wish to construct both indicators, this appendix provides two tables, one to show which food groups comprise the indicators (**Table A4-1**) and one to describe several small differences in classification of individual food items between the two indicators (**Table A4-2**).

Table A4-1. Comparing food groups in the Infant and Young Children Feeding Minimum Dietary Diversity (IYCF MDD) indicator and the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) indicator

Groups/rows on the MDD-W questionnaire[a]		10 food groups in the MDD-W	7 food groups in the IYCF MDD[b]
A. B.	Foods made from grains White roots and tubers and plantains	1. Grains, white roots and tubers, and plantains	1. Grains, roots and tubers
C.	Pulses (beans, peas and lentils)	2. Pulses (beans, peas and lentils)	2. Legumes and nuts
D.	Nuts and seeds	3. Nuts and seeds	
E.	Milk and milk products	4. Dairy	3. Dairy products
F. G. H.	Organ meat Meat and poultry Fish and seafood	5. Meat, poultry and fish	4. Flesh foods (meat, fish, poultry and liver/organ meats)
I.	Eggs	6. Eggs	5. Eggs
J.	Dark green leafy vegetables	7. Dark green leafy vegetables	6. Vitamin A-rich fruits and vegetables
K. L.	Vitamin A-rich vegetables, roots and tubers Vitamin A-rich fruits	8. Other vitamin A-rich fruits and vegetables	
M.	Other vegetables	9. Other vegetables	7. Other fruits and vegetables
N.	Other fruits	10. Other fruits	

[a] Only the first 14 rows used to calculate the MDD-W are listed here. Questionnaires for both indicators (IYCF MDD and MDD-W) may include other optional foods/groups, and the MDD-W questionnaire has two more required categories ("Condiments and seasonings" and "Other beverages and foods").

[b] Food groups names as listed in: World Health Organization (WHO). 2008. *Indicators for assessing infant and young child feeding practices. Part I: Definitions*. Geneva, WHO.

Table A4-2. Foods and beverages classified differently in the Infant and Young Child Feeding Minimum Dietary Diversity (IYCF MDD) indicator compared with the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) indicator

Food	In IYCF MDD	In MDD-W	Reason for difference
100% fruit juices 100% vegetable juices	All juices were grouped with "Sugar-sweetened beverages" and excluded from the indicator calculation	In settings where survey designers consider 100% juices to be commonly consumed **and** where they feel that enumerators can be trained to distinguish them, can be included in the appropriate fruit and vegetable groups and count in the score.	For the IYCF MDD, it was considered too difficult to distinguish in the field between juices with and without sugar added, and it was considered that those with sugar were more common. Experience since then suggests that, in some contexts, 100% juice is common and can be distinguished by enumerators, so this is left open as an option.
Ice cream	Classified in the "Dairy" group	Classified with "Sweets"	For the IYCF MDD, any dairy likely to be eaten in substantial quantity (and to provide calcium and other nutrients) was counted as dairy. Since that time, there has been increasing concern with other dimensions of diet quality, in the context of the nutrition transition. For the MDD-W, ice cream is not classified with dairy because it is a high-fat/high-sugar food and also because many low-quality ice cream products contain little dairy.
Garlic	Classified with "Other fruits and vegetables"	Classified with "Condiments and seasonings"	In the MDD-W, there is a stronger focus on excluding items usually consumed in small quantities.
Endive	Classified with "Other vegetables"	Classified with "Dark green leafy vegetables"	The current vitamin A value in the U.S. Department of Agriculture nutrient database (release 28) indicates that endive exceeds the criteria value defining a vitamin A source (see **Box 2** for explanation of criteria).
Olives	Classified with "Other fruits and vegetables"	Classified with "Other beverages and foods"	In the MDD-W, there is a stronger focus on excluding items usually consumed in small quantities.
Red palm oil	In contexts where consumed, included with "Vitamin A-rich fruits and vegetables" and counted in the score	Excluded from indicator calculation	The IYCF MDD reflected a strong focus on vitamin A. The MDD-W, while still focused on micronutrient adequacy, also seeks to balance other diet quality issues and, in this context, it is clear that an oil should not be grouped with fruits and vegetables. Note that red palm fruit/pulp is classified as a vitamin A-rich fruit for both indicator calculations.
Fish roe Snails	Classified with "Fish and seafood"	Classified with "Insects and other small protein foods"	In the MDD-W, there is a stronger focus on excluding items usually consumed in small quantities.
Seaweed	Classified with "Dark green leafy vegetables"	Classified with "Other vegetables"	Many types of seaweed are consumed globally and most do not meet the criteria for "vitamin A-rich". In local cases where it is known that the type(s) consumed meet the criteria (see **Box 2**), survey designers could still classify as "Dark green leafy vegetables".

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