Indicators for assessing infant and young child feeding practices

Definitions and measurement methods

World Health Organization

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The Working Group members were: Mary Arimond and Trevor Croft (TEAM); Laurence Grummer-Strawn and Kuntal Kumar Saha (WHO Headquarters); and Chika Hayashi, Julia Krasevec and Vrinda Mehra (UNICEF Headquarters). The Working Group conceptualized and led the production of this document including its writing and revision.

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LIST OF ACRONYMS

INDICATOR SHORT NAMES, IN ALPHABETICAL ORDER

BoF	Bottle feeding 0–23 months
CBF	Continued breastfeeding 12–23 months
EBF	Exclusive breastfeeding under six months
EBF2D	Exclusively breastfed for the first two days after birth
EFF	Egg and/or flesh food consumption 6–23 months
EIBF	Early initiation of breastfeeding
EvBF	Ever breastfed
ISSSF	Introduction of solid, semi-solid or soft foods 6–8 months
MAD	Minimum acceptable diet 6–23 months
MDD	Minimum dietary diversity 6–23 months
MixMF	Mixed milk feeding under six months
MMF	Minimum meal frequency 6–23 months
MMFF	Minimum milk feeding frequency for non-breastfed children 6–23 months
SwB	Sweet beverage consumption 6–23 months
UFC	Unhealthy food consumption 6–23 months
ZVF	Zero vegetable or fruit consumption 6–23 months

OTHER ACRONYMS

CAPI	Computer-assisted personal interviewing
DHS	Demographic and Health Surveys
IYC	Infants and young children
IYCF	Infant and young child feeding
MICS	Multiple Indicator Cluster Surveys
SSBs	Sugar-sweetened beverages
WRA	Women of reproductive age

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PART 1: DEFINITIONS

A. INTRODUCTION

Infant and young child feeding (IYCF) practices directly affect the health, development and nutritional status of children less than two years of age and, ultimately, impact child survival. Improving IYCF practices in children 0–23 months of age is therefore critical to improved nutrition, health and development.

WHO guiding principles for complementary feeding of the breastfed child *(1)* along with guiding principles for feeding non-breastfed children 6–24 months of age *(2)* provide global guidance on optimal feeding practices for supporting growth, health and behavioural development for infants and young children (IYC) under two years of age. To support programmatic action and to contribute to monitoring progress on IYCF at national and global levels, indicators for assessing infant and young child feeding practices were published in 2008 *(3, 4)*. This guidance document recommended a set of eight core and seven optional indicators. These indicators have served as the standard for data collection and reporting on IYCF practices throughout the world.

In 2017 and 2018, WHO and UNICEF convened two inter-agency technical consultations to discuss revisions of the IYCF indicators[1,2]. A broad group of experts working on IYCF programmes and measurement, including those involved in the development of the earlier IYCF indicator documents, examined potential modifications, deletions, replacements and new indicators (lists of participants are included in **Annex 1** and **Annex 2**). The consultations covered issues relating to dietary diversity, food groups, additional breastfeeding indicators and indicators of unhealthy food and beverage consumption. A key conclusion of these technical consultations was that assessment ought to include selected unhealthy eating practices.

A summary of the revised set of IYCF indicators is presented in **Table 1**. Unlike in 2008, no distinction is made between core and optional indicators in this set of recommendations. It is important to assess data using the full set of indicators for any given population and to report all findings. **Table 2** summarizes key Changes between the 2008 and 2021 recommended indicators.

This document describes the currently recommended set of indicators for IYCF. The purposes of the indicators include:

- **assessment:** to make national and subnational comparisons and describe trends over time;
- **targeting:** to identify populations at risk, target interventions and make policy decisions about resource allocation;
- **monitoring and evaluation:** to monitor progress in achieving goals and evaluate the impact of interventions.

The recommended indicators are population-level indicators which have mainly been designed for data collection in large-scale surveys or by national programmes, although

[1] Meeting Report on Reconsidering, Refining, and Extending the World Health Organization Infant and Young Child Feeding Indicators, 20–22 June 2017, New York, available at: http://www.who.int/nutrition/events/2017-team-technicalconsultation-iycf-indicators-meetingreport.pdf?ua=1 , accessed 31 August 2020.

[2] Meeting Report: Interagency Technical Consultation on Infant and Young Child Feeding Indicators, 11–13 July 2018, Geneva, available at http://www.who.int/nutrition/team/2018-team-interagency-consultation-iycf-indicators-meetingreport.pdf?ua=1 , accessed 31 August 2020.

smaller local and regional programmes may also be able to make use of them. They should not be applied for screening or assessment of individuals. Furthermore, they are not intended to meet all needs in programme monitoring and evaluation. Programmes and projects should supplement them with more specific indicators that reflect their own interventions, messages and behaviour-change objectives.

To support programme assessment, planning and monitoring, national-level reporting on estimates for IYCF indicators should take place approximately every three to five years. Every effort should be made to coordinate with those implementing other surveys in any given country in order to avoid duplication of efforts.

Where sample sizes are adequate, it is recommended that indicators be further disaggregated into smaller age groups since feeding practices may change dramatically as children grow up. For example, it may be useful to present data on exclusive breastfeeding for infants aged 0–1 month, 2–3 months and 4–5 months. For continued breastfeeding, the indicator should be presented separately for children aged 12–15 months, 16–19 months and 20–23 months. For all the complementary feeding indicators, it may be useful to present separately for children aged 6–11 months, 12–17 months and 18–23 months. Additional disaggregation may be beneficial if surveys collect information on supplementary background characteristics such as income quartiles or quintiles, maternal education, etc. However, as a general rule, estimates should not be presented if less than 25 children (unweighted) are included in the denominator.

In addition to indicators, which are calculated as individual percentages, this document also recommends the use of area graphs to illustrate how IYCF practices progress as children grow older. These graphs are useful in understanding patterns of exclusive breastfeeding at different age groups across the 0–5 month window, and provide insight into the types of beverages (and in some cases solid foods) being consumed in addition to breastmilk at each age.

SCOPE OF DOCUMENT

In Part 1 of this document, we provide an overview of the 17 IYCF indicators (**Table 1**) followed by a rationale and definition for each indicator, including the infant feeding area graphs. This is followed by a section summarizing the key changes between the 2008 and 2021 recommended indicators (**Table 2**).

Part 2 of this document provides information and tools for measuring the IYCF indicators and constructing the area graphs, including sections on:

A. Overview of methods
B. Example questionnaires
C. Instructions for calculating indicators and area graph values
D. Recommendations for adapting the questionnaire to survey context
E. Selecting and training interviewers

Several other topics are covered in the technical annexes.

AUDIENCE

This document's target audience is technical staff involved in surveys for collecting IYCF data, and is especially intended for:

- survey managers;
- technical assistance providers for surveys;
- national survey organizations (reporting to government on sustainable development goals and World Health Assembly nutrition targets, and implementers of surveys that include IYCF practices);
- international and national organizations with an interest in IYCF practices;
- researchers; and
- public health nutritionists.

Table 1. Summary of IYCF indicators

	Indicator	Short name	Age group	Definition
Breastfeeding indicators				
1	Ever breastfed	EvBF	Children born in the last 24 months	Percentage of children born in the last 24 months who were ever breastfed
2	Early initiation of breastfeeding	EIBF	Children born in the last 24 months	Percentage of children born in the last 24 months who were put to the breast within one hour of birth
3	Exclusively breastfed for the first two days after birth	EBF2D	Children born in the last 24 months	Percentage of children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth
4	Exclusive breastfeeding under six months	EBF	Infants 0–5 months of age	Percentage of infants 0–5 months of age who were fed exclusively with breast milk during the previous day
5	Mixed milk feeding under six months	MixMF	Infants 0–5 months of age	Percentage of infants 0–5 months of age who were fed formula and/or animal milk in addition to breast milk during the previous day
6	Continued breastfeeding 12–23 months	CBF	Children 12–23 months of age	Percentage of children 12–23 months of age who were fed breast milk during the previous day

	Indicator	Short name	Age group	Definition
Complementary feeding indicators				
7	Introduction of solid, semi-solid or soft foods 6–8 months	ISSSF	Infants 6–8 months of age	Percentage of infants 6–8 months of age who consumed solid, semi-solid or soft foods during the previous day
8	Minimum dietary diversity 6–23 months	MDD	Children 6–23 months of age	Percentage of children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day
9	Minimum meal frequency 6–23 months	MMF	Children 6–23 months of age	Percentage of children 6–23 months of age who consumed solid, semi-solid or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more during the previous day
10	Minimum milk feeding frequency for non-breastfed children 6–23 months	MMFF	Children 6–23 months of age	Percentage of non-breastfed children 6–23 months of age who consumed at least two milk feeds during the previous day
11	Minimum acceptable diet 6–23 months	MAD	Children 6–23 months of age	Percentage of children 6–23 months of age who consumed a minimum acceptable diet during the previous day
12	Egg and/or flesh food consumption 6–23 months	EFF	Children 6–23 months of age	Percentage of children 6–23 months of age who consumed egg and/or flesh food during the previous day
13	Sweet beverage consumption 6–23 months	SwB	Children 6–23 months of age	Percentage of children 6–23 months of age who consumed a sweet beverage during the previous day
14	Unhealthy food consumption 6–23 months	UFC	Children 6–23 months of age	Percentage of children 6–23 months of age who consumed selected sentinel unhealthy foods during the previous day
15	Zero vegetable or fruit consumption 6–23 months	ZVF	Children 6–23 months of age	Percentage of children 6–23 months of age who did not consume any vegetables or fruits during the previous day
Other indicators				
16	Bottle feeding 0–23 months	BoF	Children 0–23 months of age	Percentage of children 0–23 months of age who were fed from a bottle with a nipple during the previous day
17	Infant feeding area graphs	AG	Infants 0–5 months of age	Percentage of infants 0–5 months of age who were fed exclusively with breast milk, breast milk and water only, breast milk and non-milk liquids, breast milk and animal milk/formula, breast milk and complementary foods, and not breastfed during the previous day

B. DEFINITIONS OF INDICATORS

1. BREASTFEEDING INDICATORS

1.1. EVER BREASTFED (EvBF)

Rationale for indicator: breastfeeding is recommended for all infants worldwide except, in very few cases, for those with specific medical conditions *(5)*. While the prevalence of ever breastfeeding is high in most countries, this is not the case universally. Particularly in high-income countries, this indicator is useful for assessing the overall acceptance of breastfeeding and for advocacy efforts.

Indicator definition: percentage of children born in the last 24 months who were ever breastfed.

Numerator: children born in the last 24 months who were ever breastfed.

Denominator: children born in the last 24 months.

1.2. EARLY INITIATION OF BREASTFEEDING (EIBF)

Rationale for indicator: WHO Global Strategy for Infant and Young Child Feeding recommends that infants be breastfed within one hour of birth *(6)*. WHO guidelines on maternity care state that "all mothers should be supported to initiate breastfeeding as soon as possible after birth, within the first hour after delivery" *(7)*. Early initiation of breastfeeding confers a host of benefits. Putting newborns to the breast necessitates skin-to-skin contact, and this closeness between mother and baby in the moments after delivery provides both short- and long-term benefits. Immediate skin-to-skin contact helps regulate the body temperature of newborns and allows their bodies to be populated with beneficial bacteria from their mother's skin *(8)*. Putting babies to the breast within an hour of birth is strongly predictive of future exclusive breastfeeding *(9, 10)*. Children who are not put to the breast within the first hour after birth face a higher risk of common infections and death *(11)*.

Indicator definition: percentage of children born in the last 24 months who were put to the breast within one hour of birth.

Numerator: children born in the last 24 months who were put to the breast within one hour of birth.

Denominator: children born in the last 24 months.

Notes

- Early initiation of breastfeeding does not require that the infant suckled at the breast or that milk was transferred from breast to infant. It represents the practice of putting the baby to breast within the first hour, which is related to a number of positive outcomes including reduced mortality and exclusive breastfeeding.

1.3. EXCLUSIVELY BREASTFED FOR THE FIRST TWO DAYS AFTER BIRTH (EBF2D)

Rationale for indicator: WHO Global Strategy for Infant and Young Child Feeding recommends that infants be exclusively breastfed from birth until they turn six months of age *(6)*.

WHO Guidelines on maternity care state that "mothers should be discouraged from giving any food or fluids other than breast milk, unless medically indicated" *(7)*. Feeding newborns anything other than breast milk has the potential to delay their first critical contact with their mother and can make it more difficult to establish breastfeeding over the long term. However, it is common in many parts of the world to give newborns foods or liquids other than breast milk in the first few days after birth *(12)*. Outdated practices in some maternity wards involve separating newborns from their mothers and giving them liquids such as sugar water or infant formula while their mothers rest *(13)*.

Indicator definition: percentage of children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth.

Numerator: children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth.

Denominator: children born in the last 24 months.

Notes

- Exclusive breastfeeding is defined as breastfeeding with no other food or drink, not even water.
- Breastfeeding by a wet nurse, feeding of expressed breast milk, and feeding of donor human milk all count as being fed breast milk.
- Prescribed medicines, oral rehydration solution, vitamins and minerals are not counted as fluids or foods. However, herbal fluids and similar traditional medicines are counted as fluids, and infants who consume these are not exclusively breastfed.

1.4. EXCLUSIVE BREASTFEEDING UNDER SIX MONTHS (EBF)

Rationale for indicator: WHO Global Strategy for Infant and Young Child Feeding recommends that infants be exclusively breastfed until they turn six months of age *(6)*. Exclusive breastfeeding is the safest and healthiest option for children everywhere, guaranteeing infants a food source that is uniquely adapted to their needs while also being safe, clean, healthy and accessible. Evidence suggests that infants in low- and middle-income countries who received mixed feeding (foods and liquids in addition to breast milk) before six months were nearly three times more likely to die than those who were exclusively breastfed *(14)*. Exclusive breastfeeding protects against diarrhoea, lower respiratory infections, acute otitis media and childhood overweight and obesity *(15*).

Indicator definition: percentage of infants 0–5 months of age who were fed exclusively with breast milk during the previous day.

Numerator: infants 0–5 months of age who were fed only breast milk during the previous day.

Denominator: infants 0–5 months of age.

Notes

- Exclusive breastfeeding is defined as breastfeeding with no other food or drink, not even water.
- Breastfeeding by a wet nurse, feeding of expressed breast milk, and feeding of donor human milk all count as being fed breast milk.
- Prescribed medicines, oral rehydration solution, vitamins and minerals are not counted as fluids or foods. However, herbal fluids and similar traditional medicines are counted as fluids, and infants who consume these are not exclusively breastfed.

1.5. MIXED MILK FEEDING UNDER SIX MONTHS (MixMF)

Rationale for indicator: this indicator has been included to capture the practice of feeding formula and/or animal milk in addition to breast milk among infants less than six months of age. Although this is not a recommended practice as non-human milks are likely to displace breast milk, this practice is common across many countries. Mixed milk feeding with breast milk plus a breast milk substitute is associated with increased risks of early cessation of breastfeeding, reduced breast milk production *(16)* and altered gut microflora *(17)*. The risk of diarrhoea among mixed-fed infants in poor sanitation areas tends to be higher than the risk among infants fed only breast milk *(18)*. This indicator is useful for advocacy purposes in documenting the extent to which non-human milks are being used to substitute for breastfeeding.

Indicator definition: percentage of infants 0–5 months of age who were fed formula and/or animal milk in addition to breast milk during the previous day.

Numerator: infants 0–5 months of age who were fed formula and/or animal milk in addition to breast milk during the previous day.

Denominator: infants 0–5 months of age.

Notes

- Mixed milk feeding includes any formula (e.g. infant formula, follow-on formula, "toddler milk") or any liquid animal milk other than human breast milk, (e.g. cow's milk, goat's milk, evaporated milk or reconstituted powdered milk).
- Breastfeeding by a wet nurse, feeding of expressed breast milk and feeding of donor human milk all count as being fed breast milk.
- Yogurt, whether liquid or solid, is not counted here because it is not generally given as a substitute for breast milk.

1.6. CONTINUED BREASTFEEDING 12–23 MONTHS (CBF)

Rationale for indicator: WHO Global Strategy for Infant and Young Child Feeding recommends that children continue breastfeeding for two years or beyond *(6)*. Children who are still breastfed after one year of age can meet a substantial portion of their energy needs with the breast milk in their diet. Continued breastfeeding is also vital during illness: while sick children often have little appetite for solid food, continued breastfeeding can help prevent dehydration while also providing the nutrients required for recovery *(19)*. Continued breastfeeding could prevent half of all deaths caused by infectious diseases between six and 23 months of age *(14)*. Continued breastfeeding is consistently associated with higher performance in intelligence tests among children and adolescents, with children breastfed longer than 12 months benefiting the most *(20)*. Longer periods of breastfeeding may reduce a child's risk of becoming overweight or obese *(15)*. Continued breastfeeding is also important for mothers, reducing the risk of breast cancer and potentially reducing their risk of ovarian cancer and type 2 diabetes *(21)*.

Indicator definition: percentage of children 12–23 months of age who were fed breast milk during the previous day.

Numerator: children 12–23 months of age who were fed breast milk during the previous day.

Denominator: children 12–23 months of age.

Notes

- Breastfeeding by a wet nurse and feeding of expressed breast milk both count as being fed breast milk.
- This indicator replaces the previous indicators for continued breastfeeding at one year (among children aged 12–15 months) and two years (among children aged 20–23 months): it is therefore recommended that the indicator be disaggregated and reported separately for the age-groups 12–15 months, 16–19 months and 20–23 months, whenever the sample size is large enough.

2. COMPLEMENTARY FEEDING INDICATORS

2.1. INTRODUCTION OF SOLID, SEMI-SOLID OR SOFT FOODS 6–8 MONTHS (ISSSF)

Rationale for indicator: WHO Global Strategy for Infant and Young Child Feeding recommends that solid, semi-solid and soft foods be introduced at six months of age *(6)*. Guiding principles for complementary feeding of the breastfed child similarly state: "introduce complementary foods at six months of age (180 days) while continuing to breastfeed" *(1)*. After the first six months of life, infants' nutrient demands start to exceed what breast milk alone can provide and this leaves them vulnerable to malnutrition unless solids are introduced *(22)*. An analysis of 14 countries found that children aged 6–8 months who ate solid or semi-solid foods had a lower risk of being stunted or underweight *(23)*.

Indicator definition: percentage of infants 6–8 months of age who consumed solid, semi-solid or soft foods during the previous day.

Numerator: infants 6–8 months of age who consumed solid, semi-solid or soft foods during the previous day.

Denominator: infants 6–8 months of age.

2.2. MINIMUM DIETARY DIVERSITY 6–23 MONTHS (MDD)

Rationale for indicator: WHO guiding principles for feeding the breastfed child and non-breastfed child recommend that children aged 6–23 months be fed a variety of foods to ensure that nutrient needs are met *(1, 2)*. Food group diversity is associated with improved linear growth in young children *(24)*. A diet lacking in diversity can increase the risk of micronutrient deficiencies, which may have a damaging effect on children's physical and cognitive development *(25)*. One study found that little or no consumption of nutrient-dense foods such as eggs, dairy products, fruits and vegetables between six months and 23 months of age was associated with stunting *(26)*.

Indicator definition: percentage of children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day.

Numerator: children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day. The eight food groups used for tabulation of this indicator are:

1. breast milk;
2. grains, roots, tubers and plantains;
3. pulses (beans, peas, lentils), nuts and seeds;
4. dairy products (milk, infant formula, yogurt, cheese);
5. flesh foods (meat, fish, poultry, organ meats);
6. eggs;
7. vitamin-A rich fruits and vegetables; and
8. other fruits and vegetables.

Denominator: children 6–23 months of age.

Notes

- Consumption of any amount of food or beverage from a food group is sufficient to "count", i.e. there is no minimum quantity.
- The previous indicator was based on a cut-off of four out of seven food groups. The indicator was revised in 2017 to add breast milk as a separate food group, thereby increasing the total number of food groups to eight and increasing the cut-off to five groups. The indicator was revised because the previous indicator included infant formula but not breast milk, thereby conferring an advantage to formula-fed infants when counting food groups.

2.3. MINIMUM MEAL FREQUENCY 6–23 MONTHS (MMF)

Rationale for indicator: WHO guiding principles for feeding the breastfed child recommend that breastfed infants aged 6–8 months be provided complementary foods 2–3 times per day and breastfed children aged 9–23 months be provided complementary foods 3–4 times per day with additional nutritious snacks offered 1–2 times per day *(1)*. Guiding principles on feeding the non-breastfed child increase that recommendation to 4–5 meals per day for non-breastfed children *(2)*. Feeding meals/snacks less frequently than recommended can compromise total energy and micronutrient intake, which in turn may cause growth faltering, stunting and micronutrient deficiencies.

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

Numerator: children 6–23 months of age who consumed solid, semi-solid or soft foods at least the minimum number of times during the previous day. The minimum number of times is defined as:

- two feedings of solid, semi-solid or soft foods for breastfed infants aged 6–8 months;
- three feedings of solid, semi-solid or soft foods for breastfed children aged 9–23 months; and
- four feedings of solid, semi-solid or soft foods or milk feeds for non-breastfed children aged 6–23 months whereby at least one of the four feeds must be a solid, semi-solid or soft feed.

Denominator: children 6–23 months of age.

Notes

- "Feedings" include both meals and snacks, other than trivial amounts.
- Milk feeds include any formula (e.g. infant formula, follow-on formula, "toddler milk") or any animal milk other than human breast milk, (e.g. cow milk, goat milk, evaporated milk or reconstituted powdered milk) as well as semi-solid and fluid/drinkable yogurt and other fluid/drinkable fermented products made with animal milk.
- Milk feeds are not included for breastfed children because the minimum meal frequencies for this indicator assume average breast milk intake: if a substantial amount of energy is derived from other milk feeds, breast milk intake is likely to be considerably lower than average.

2.4. MINIMUM MILK FEEDING FREQUENCY FOR NON-BREASTFED CHILDREN 6–23 MONTHS (MMFF)

Rationale for indicator: milk and other dairy products are rich sources of calcium and other nutrients. WHO guiding principles for feeding non-breastfed children aged 6–23 months state that "the amount of milk needed to meet nutrient requirements depends on the other foods consumed by the child" *(2)*. When the child's diet does not include fortified foods or supplements, the daily requirement of milk is about 200–400 mL if other animal-source foods are included in the diet and about 300–500 mL if other animal-source foods are not included *(27)*. Serving sizes for milk vary but should generally be over 100 mL (3.5 fluid ounces) and range up to 240 mL (8 ounces). Based on these figures, a minimum of two milk feeds would generally be necessary to provide 200–500 mL per day.

Indicator definition: percentage of non-breastfed children 6–23 months of age who consumed at least two milk feeds during the previous day.

Numerator: non-breastfed children 6–23 months of age who consumed at least two milk feeds during the previous day.

Denominator: non-breastfed children 6–23 months of age.

Notes

- Milk feeds include any formula (e.g. infant formula, follow-on formula, "toddler milk") or any animal milk other than human breast milk, (e.g. cow milk, goat milk, evaporated milk or reconstituted powdered milk) as well as semi-solid and fluid/drinkable yogurt and other fluid/drinkable fermented products made with animal milk.

2.5. MINIMUM ACCEPTABLE DIET 6–23 MONTHS (MAD)

Rationale for indicator: WHO guiding principles on feeding the breastfed child and the non-breastfed child recommend that children aged 6–23 months be fed meals at an appropriate frequency and in a sufficient variety to ensure, respectively, that energy and nutrient needs are met *(1, 2)*. This indicator combines information on minimum dietary diversity and minimum meal frequency, with the extra requirement that non-breastfed children should have received milk at least twice on the previous day.

Indicator definition: percentage of children 6–23 months of age who consumed a minimum acceptable diet during the previous day.

Numerator: children 6–23 months of age who consumed a minimum acceptable diet during the previous day.

The minimum acceptable diet is defined as:

- *for breastfed children*: receiving at least the minimum dietary diversity and minimum meal frequency for their age during the previous day;
- *for non-breastfed children*: receiving at least the minimum dietary diversity and minimum meal frequency for their age during the previous day as well as at least two milk feeds.

Denominator: children 6–23 months of age.

2.6. EGG AND/OR FLESH FOOD CONSUMPTION 6–23 MONTHS (EFF)

Rationale for indicator: WHO guiding principles for feeding breastfed and non-breastfed children state that "meat, poultry, fish or eggs should be eaten daily, or as often as possible" *(1, 2)*. There is evidence that children who consume eggs and flesh foods have higher intakes of various nutrients important for optimal linear growth. Consuming eggs is associated with increased intakes of energy, protein, essential fatty acids, vitamin B_{12}, vitamin D, phosphorus and selenium, and with higher recumbent length *(28)*. Introduction of meat as an early complementary food for breastfed infants was associated with improved protein and zinc intake *(29, 30)*. There is also evidence of low prevalence of egg and flesh food intake across many countries *(31)*.

Indicator definition: percentage of children 6–23 months of age who consumed egg and/or flesh food during the previous day.

Numerator: children 6–23 months of age who consumed egg and/or flesh food during the previous day.

Denominator: Children 6–23 months of age.

Notes

- This indicator is based on consumption of food groups 5 (flesh foods) and 6 (eggs) described in indicator 8 on MDD. Children are counted if either food group has been consumed.

2.7. SWEET BEVERAGE CONSUMPTION 6–23 MONTHS (SwB)

Rationale for indicator: WHO guiding principles for complementary feeding advise against giving sweet drinks, such as soft drinks, as they contribute no nutrients other than energy and may displace more nutritious foods *(1, 2)*. Higher intakes of sugar-sweetened beverages (SSBs) have been associated with an increased obesity risk among children of all ages. Early introduction of SSBs (before 12 months of age) is associated with obesity at six years of age *(32)*. Consumption of SSBs is common in many countries irrespective of their income level: studies in the US and Australia report that IYC are fed with SSBs including soft drinks *(33-35)*. Consumption of commercially produced SSBs is also common in many low- and middle-income countries *(36, 37)*. SSB consumption during the complementary feeding period is associated with an increased risk of obesity in childhood. There is also a positive association between 100% fruit juice intake and infant weight-for-length and child BMI z-scores *(38)*. Consumption of free sugars, including from 100% juice and SSBs, is associated with increased risk of dental caries *(39)*.

Evidence for harm is stronger for SSBs than for 100% juice and guidance on juice consumption is generally more mixed and nuanced. However, in the context of most surveys, respondents are not able to distinguish between 100% juice and sugar-sweetened juice drinks. SSBs and 100% juice therefore have equal status in this sweet beverage consumption indicator.

Indicator definition: percentage of children 6–23 months of age who consumed a sweet beverage during the previous day.

Numerator: children 6–23 months of age who consumed a sweet beverage during the previous day.

Denominator: children 6–23 months of age.

Notes

- Sweet beverages include commercially produced and packaged, sweetened beverages such as soda pop, fruit-flavoured drinks, sports drinks, chocolate and other flavoured milk drinks, malt drinks, etc.
- Sweet beverages include 100% fruit juice as well as fruit-flavoured drinks, whether made at home, by informal vendors or packaged in cans, bottles, boxes, sachets, etc.
- Sweet beverages include home-made drinks of any kind to which sweeteners (e.g. sugar, honey, syrup, flavoured powders) have been added.

2.8. UNHEALTHY FOOD CONSUMPTION 6–23 MONTHS (UFC)

Rationale for indicator: in many low- and middle-income countries, diet patterns are shifting towards higher intakes of added sugars, unhealthy fats, salt and refined carbohydrates. Commercially prepared food products are often energy-dense, nutrient-poor and high in salt, sugar, saturated and/or trans fatty acids.

A variety of guidance documents indicate the need to avoid or limit these types of foods when feeding IYC. Guidance from the European Society for Paediatric Gastroenterology, Hepatology and Nutrition suggests limiting free sugar intake to <5% of the total caloric intake for children under two years of age *(40)*. Consumption of one cream-filled cookie exceeds this limit. Recent national guidance for feeding IYC advises avoidance of foods such as candies, chocolate, chips, French fries, cakes and cookies: see, for example, guidance from Ireland and Panama *(41-42)*. Consumption of such foods may displace more nutritious foods and limit the intake of essential vitamins and minerals. For instance, one serving of potato chips (10–15 potato chips) provides nearly one third of the daily food energy requirement for breastfed one-year-olds and a higher proportion for infants under 12 months of age. Recently, unhealthy snack food and beverage consumption has been associated with a higher risk of nutrient inadequacy, and lower length-for-age among one-year-olds *(43)*.

Food preferences that begin early in life track into later childhood and adolescence. Repeated exposure to sweet beverages and foods in childhood may enhance the innate preference for the sweet taste and thus increase the consumption of sweet-tasting beverages and foods as a future learned preference *(44, 45)*. Such practices, if continued throughout adolescence and adulthood, can increase the risk of becoming overweight or obese, and of related chronic diseases later in life.

The indicator definition below refers to "sentinel unhealthy foods". In this context, "sentinel unhealthy foods" are foods or categories of foods (e.g. "sweets" or "candies") that are likely to be consumed by IYC and are high in sugar, salt and/or unhealthy fats.[1]

Indicator definition: percentage of children 6–23 months of age who consumed selected sentinel unhealthy foods during the previous day.

Numerator: children 6–23 months of age who consumed selected sentinel unhealthy foods during the previous day.

Denominator: children 6–23 months of age.

Notes

- Selected sentinel unhealthy foods are:
  - Candies, chocolate and other sugar confections, including those made with real fruit or vegetables like candied fruit or fruit roll-ups.
  - Frozen treats like ice cream, gelato, sherbet, sorbet, popsicles or similar confections.
  - Cakes, pastries, sweet biscuits and other baked or fried confections which have at least a partial base of a refined grain, including those made with real fruit or vegetables or nuts, like apple cake or cherry pie.
  - Chips, crisps, cheese puffs, French fries, fried dough, instant noodles and similar items which contain mainly fat and carbohydrate and have at least a partial base of a refined grain or tuber. These foods are also often high in sodium.
- The items in these four categories of unhealthy foods include those commercially produced and packaged, produced by small-scale producers such as street-food vendors or made at home. While some of the food items reported by interview respondents may have healthy qualities, in general the selected sentinel food categories tend to have unhealthy qualities.
- The food categories included here do not cover all types of unhealthy food items that might be consumed by IYC in any given country. These food categories were selected as sentinels because they represent some of the most commonly consumed and less healthy choices likely to displace more nutritious foods in IYC diets in many countries.
- Consumption of any amount of food from any of the sentinel categories "counts", i.e. there is no minimum quantity.

2.9. ZERO VEGETABLE OR FRUIT CONSUMPTION 6–23 MONTHS (ZVF)

Rationale for indicator: WHO indicates that low vegetable and fruit consumption is associated with increased risk of noncommunicable diseases (NCDs). Low consumption of fruits and vegetables was linked to 3.9 million deaths in 2017, placing this among the top 10 risk factors for global mortality *(46)*. While these statistics are primarily based on data from adults, there is evidence that low fruit and vegetable intake in young children is linked to low intake later in life *(47, 48)*. The American Academy of Pediatrics recommends one vegetable serving with every meal in the target age group *(47)*. While there is no universal recommendation for the optimal number of servings of vegetables and fruits per day for

[1] For another use of the concept of "sentinel foods" (sodium intake monitoring), see the United States Department of Agriculture operational definition of sentinel foods at: https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/methods-and-application-of-food-composition-laboratory/mafcl-site-pages/monitoring-sodium/, accessed 31 August 2020.

IYC over six months of age, consumption of zero vegetables or fruits on the previous day represents an unhealthy practice.

Indicator definition: percentage of children 6–23 months of age who did not consume any vegetables or fruits during the previous day.

Numerator: children 6–23 months of age who did not consume any vegetables or fruits during the previous day.

Denominator: children 6–23 months of age.

Notes

- This indicator is based on consumption of food groups 7 (vitamin A-rich fruits and vegetables) and 8 (other fruits and vegetables) described in the MDD indicator above. Plantains, starchy roots and tubers in food group 2 (such as white potatoes, yams and cassava) do not count for this indicator.
- Children are counted if there was no consumption of either food group.

3. OTHER INDICATORS

3.1. BOTTLE FEEDING 0–23 MONTHS (BoF)

Rationale for indicator: WHO guiding principles recommend avoiding the use of feeding bottles because they are difficult to keep clean and represent a particularly important route for the transmission of pathogens *(2)*. Bottle feeding may interfere with optimal suckling behaviour. WHO recommends the use of cup feeding and avoidance of feeding bottles *(2)*.

Indicator definition: percentage of children 0–23 months of age who were fed from a bottle with a nipple during the previous day.

Numerator: children 0–23 months of age who were fed from a bottle with a nipple during the previous day.

Denominator: children 0–23 months of age.

Notes

- This indicator is based on consumption of any food or drink from a bottle with a nipple/teat (including breast milk).

3.2. INFANT FEEDING AREA GRAPHS (AG)

While the indicators recommended above are useful for comparing population groups, targeting programmes, and evaluating progress over time, they provide a limited understanding of how population-level feeding patterns change with the age of the infant. In addition to calculating numerical indicators, we also recommend presenting graphic displays of how IYC are fed.

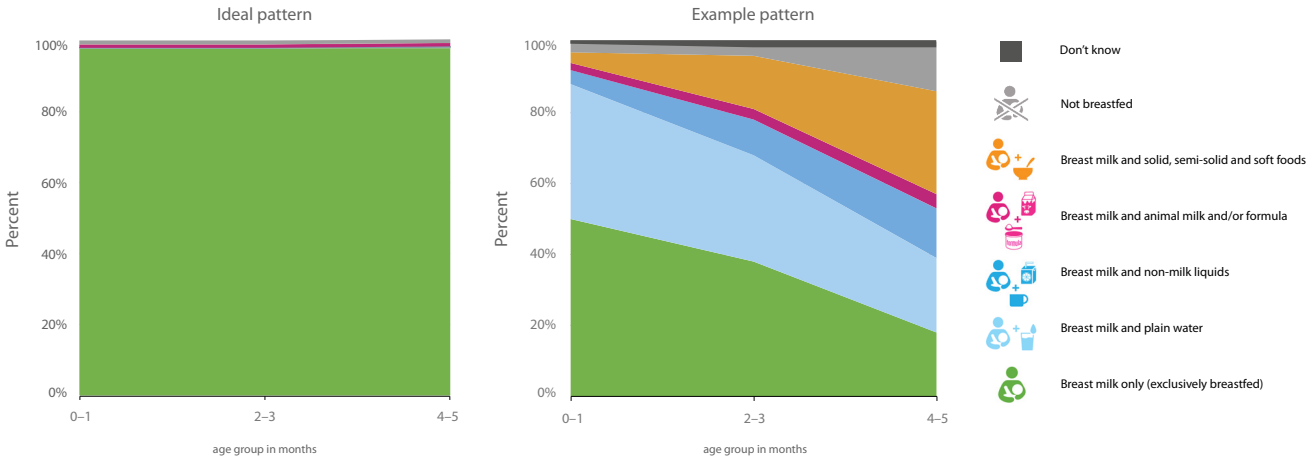
The standard recommended area graph classifies IYC into one of six categories:

- exclusively breastfed;
- breastfed and plain water only;
- breastfed and non-milk liquids (no solid or semi-solid foods and no animal milk-based liquids or infant formula);
- breastfed and animal milk or formula (no solid or semi-solid foods);
- breastfed and solid or semi-solid foods; or
- not breastfed.

The percentage of children entering each of these categories is calculated by two-month age groups and graphed for infants under six months of age. Fig. 1 displays two area graphs, one showing an ideal pattern and the second showing an example of a country pattern typically observed in practice.

In the ideal pattern, almost all infants under six months of age are exclusively breastfed. In the example country pattern, there are several non-ideal practices that could be addressed programmatically. A substantial proportion of infants (approx. 25%) receive water from birth and thus are not exclusively breastfed. Similarly, a substantial proportion (approx. 20% by 4–5 months of age) receive solid or semi-solid foods too early and are not exclusively breastfed.

Figure 1. **Area graph patterns of infant feeding practices by age group**



C. CHANGES BETWEEN THE 2008 AND 2021 IYCF INDICATORS

Table 2 summarizes the key changes in the IYCF indicators between 2008 and 2021, their name and main rationale for changes. In total, there are 17 recommended IYCF indicators in the 2021 edition. Seven are new, and four of the 2008 indicators have been excluded from the 2021 list of IYCF indicators.

Table 2. Changes between the 2008 and 2021 IYCF indicators

2008 indicator	2021 indicator	Key change	Main rationale
Children ever breastfed	Ever breastfed	This was an "optional" indicator in the 2008 set of indicators	There is no longer a set of optional indicators; all are recommended.
Early initiation of breastfeeding	Early initiation of breastfeeding	No change	
	Exclusively breastfed for the first two days after birth	New indicator	Feeding newborns anything other than breast milk can make it more difficult to establish breastfeeding.
Exclusive breastfeeding under six months	Exclusive breastfeeding under six months	No change	
	Mixed milk feeding under six months	New indicator	This indicator may be useful for advocacy purposes to document the extent to which non-human milks are used to supplement breastfeeding.
Continued breastfeeding at one year (12–15 months)	Continued breastfeeding 12–23 months	Age window widened to reflect any breastfeeding in the second year of life	Sample size tended to be small for children aged 12–15 months and age window did not accurately reflect "at 1 year".
Introduction of solid, semi-solid or soft foods	Introduction of solid, semi-solid or soft foods 6–8 months	Calculation is now based on the food list question rather than the frequency of feeding question	Brought into line with data analysis practices of two major household survey programmes, the Multiple Indicator Cluster Survey (MICS) and the Demographic and Health Surveys (DHS).
Minimum dietary diversity	Minimum dietary diversity 6–23 months	Breast milk added as an eighth food group and cut-off for minimum increased to five food groups	Previous definition disadvantaged breastfed children in not counting breast milk as a food group.
Minimum meal frequency	Minimum meal frequency 6–23 months	At least one non-milk feeding is required to meet minimum for non-breastfed children while the previous definition allowed children to achieve the minimum with milk feeds only	Dietary intake for this age group needs to include solid, semi-solid or soft foods; allowing consumption of only milk-based meals was not in line with guiding principles on IYC feeding.
Milk feeding frequency for non-breastfed children	Minimum milk feeding frequency for non-breastfed children 6–23 months	This was an "optional" indicator in the 2008 set of indicators	There is no longer a set of optional indicators; all are recommended.

2008 indicator	2021 indicator	Key change	Main rationale
Minimum acceptable diet	Minimum acceptable diet 6–23 months	Altered to reflect changes in MDD and MMF above	See above.
	Egg and/or flesh food consumption 6–23 months	New indicator	Diets lacking egg and/or flesh foods are less likely to meet nutrient needs for IYC.
	Sweet beverage consumption 6–23 months	New indicator	Intake of sweet beverages is associated with increased weight-for-length and BMI z-scores, and intake of sugar-sweetened beverages with an obesity risk in children.
	Unhealthy food consumption 6–23 months	New indicator	Unhealthy foods displace nutritious foods and establish dietary preferences that persist throughout childhood and into adulthood.
	Zero vegetable or fruit consumption 6–23 months	New indicator	Low vegetable and fruit consumption is associated with an increased risk of noncommunicable diseases.
Bottle feeding	Bottle feeding 0–23 months	This was an "optional" indicator in the 2008 set of indicators	There is no longer a set of optional indicators; all are recommended.
Infant feeding area graphs	Area graphs under 6 months	New indicator	These graphs were recommended in the previous guidance for 0–23 months, but not listed among the indicators. Given their value in situation analysis and monitoring, they have now been included as "other indicators".
Consumption of iron-rich or iron-fortified foods		Deleted	Hard to operationalize in household surveys.
Continued breastfeeding at two years (20–23 months) (optional)		Combined with continued breastfeeding 12–23 months as described above	
Age-appropriate breastfeeding (optional)		Deleted	Composite indicator that was hard to interpret programmatically.
Predominant breastfeeding under six months (optional)		Deleted	Predominant breastfeeding is not recommended. The indicator was rarely used; not considered useful.
Duration of breastfeeding (optional)		Deleted	Difficult to calculate and hard to communicate.

PART 2: MEASUREMENT METHODS

INTRODUCTION

This chapter provides guidance for collecting data on IYCF practices and calculating indicator estimates. It covers the following topics:

A. Overview of methods

B. Example questionnaires

C. Instructions for calculating indicators and area graph values

D. Recommendations for adapting the questionnaire to survey context

E. Selecting and training interviewers

Technical annexes provide additional details on some topics. In addition to the survey methods described in this chapter, survey planners and implementers may need guidance on a range of survey topics not specific to the IYCF indicators. These may include survey and sample design, determination of sample size, methods for selecting respondents, methods for determining the age of children and women, and selected resources covering these topics.

Over the last decade, two survey programmes have provided most of the nationally representative data for the IYCF indicators: Demographic and Health Surveys (DHS) and UNICEF Multiple Indicator Cluster Surveys (MICS). In preparing this chapter we have drawn on their experiences.

A. OVERVIEW OF METHODS

A.1. SURVEY DESIGN

Data for the IYCF indicators and area graphs are collected in household surveys. Commonly, the survey design involves sampling households, whereby individuals within the households serve as respondents for the questionnaires. The text below is based on this survey design. In some surveys, individuals are directly sampled from target age groups (e.g. by sampling solely women of reproductive age, defined as females aged at least 15 and less than 50 years, or IYC under 24 months of age), but this type of approach is not described here.

Survey modules with questions about IYCF practices are almost always embedded in larger questionnaires which address issues such as household demographics, living conditions, health, food security and related topics. IYCF modules may feature in relatively small, focused questionnaires or be part of extended questionnaires with a very large number of modules.

See **Annex 3** for some advice regarding sampling and design issues specific to food group recall surveys and **Annex 4** for resources related to survey methodology in general.

A.2. SURVEY RESPONDENTS

Respondents in IYCF practice surveys are usually mothers but may also be other caregivers. For the first three IYCF indicators which are related to feeding in the first few days after birth (ever breastfed, early initiation of breastfeeding and exclusively breastfed for the first two days after birth), the respondents are women of reproductive age who have given birth in the last two years. Ideally, surveys should interview all women of reproductive age in the sampled households to assess these three indicators.

For the current status indicators 4–16, the respondent should be the person who knows most about the current care and feeding of the infant or child. The survey should include all IYC in the sampled households. In some cases, multiple caregivers may have fed the child at different times during the previous day (e.g. a mother and grandmother, or a mother and sister). If available, they can all be asked to participate in the interview.

If no respondent is present who knows what the IYC was fed during the previous day, there are several options. The best strategy is to arrange a call-back when somebody who knows what the child was fed is available. However, in surveys with multiple modules, it may not be feasible to arrange call-backs if the sole missing item is knowledge of the previous day's IYCF practices. In this event, the IYCF questions may need to be marked "don't know".

A.3. FOCUS IYC, INDICATOR DENOMINATORS AND PRECISION OF ESTIMATES

Questions relating to the first three IYCF indicators (ever breastfed, early initiation of breastfeeding, and exclusively breastfed for the first two days after birth) should be asked about all live births occurring in the last 24 months, whether the infants concerned are living or dead at the time of the interview; they are therefore generally applicable to any woman who has given birth in the previous two years. Questions relating to the remaining IYCF indicators apply to all living children under the age of two years in sampled households (i.e. all children 0 to 23 months of "completed" age in the sampled households.) The specific age grouping for each indicator determines the denominator. Some indicators will consequently be more precise (i.e. have smaller confidence intervals) than others, because they are based on a larger number of IYC. For the indicators with the smallest age ranges, estimates will be less precise (i.e. have larger confidence intervals).

In **Table 3** below, the indicators are listed in order from most to least precise.

Table 3. Precision of indicators

Most precise

Indicator	Denominator
Ever breastfed Early initiation of breastfeeding Exclusively breastfed for the first two days after birth	Children born in the last 24 months, whether living or dead
Bottle feeding 0–23 months	Living children 0–23 months of age
Minimum dietary diversity 6–23 months Minimum meal frequency 6–23 months Minimum acceptable diet 6–23 months Egg and/or flesh food consumption 6–23 months Sweet beverage consumption 6–23 months Unhealthy food consumption 6–23 months Zero vegetable or fruit consumption 6–23 months	Living children 6–23 months of age
Continued breastfeeding 12–23 months	Living children 12–23 months of age
Exclusive breastfeeding under six months Mixed milk feeding under six months	Living infants 0–5 months of age
Introduction of solid, semi-solid or soft foods 6–8 months	Living infants 6–8 months of age

Least precise

The list does not include the indicator "Minimum milk feeding frequency for non-breastfed children 6–23 months of age" because its precision varies with the number of non-breastfed children in the sample. In samples where very few IYC are not breastfed its precision will be low.

A.4. RECALL PERIODS

Surveys of IYCF practices are based on caregiver recall (or memory) of feeding practices. This is also called "self-reporting".

The IYCF example questionnaires (Section B) include questions that ask the caregiver to recall practices immediately after the child's birth in relation to the first three indicators, and questions about the previous day (the day before the survey) for the remaining indicators. These are sometimes referred to as "retrospective" and "current status" questions,

respectively. The recall period for retrospective questions varies with the child's age, and caregivers may be asked to recollect events occurring up to two years in the past. By contrast, current status questions adopt the same very recent recall period ("yesterday") for IYC of all ages included in the survey.

In general, longer recall periods for dietary intake questions are associated with more recall bias, i.e. more systematic inaccuracy or incompleteness in recall.[1] For this reason, most of the questions on the IYCF questionnaires are current status questions, based on recall of the very recent past (the previous day). In specific terms, this recall period starts from when the IYC awoke the previous day and extends throughout the day and night until its waking on the morning of the interview day, for a total time period of approximately 24 hours.

A.5. METHOD FOR ASKING ABOUT BEVERAGES GIVEN TO THE CHILD

For many infants, beverages are introduced early in life, before semi-solid or solid foods. In the example questionnaire in Section B, respondents are asked about a series of beverages that the IYC may have received during the previous day or at night. Because beverage intake is important for defining whether or not an infant was exclusively breastfed, and because beverages may otherwise be easily forgotten, the respondent should be taken through an extensive list of different types of beverages.

A.6. METHODS FOR ASKING ABOUT SOLID/SEMI-SOLID FOODS FED TO THE CHILD

There are two methods described in this guidance document for asking respondents about foods fed to the child: open recall and list-based recall. For beverages, the list-based method is recommended. Section B provides example questionnaires that illustrate each of these two methods. Both methods described are non-quantitative, i.e. they do not involve asking "how much" or "how often", but only ask "what" foods and drinks the IYC has consumed.[2] In this section, Box 1 provides a brief overview of each method.

Both methods in **Box 1** aim to capture information on simple one-ingredient foods and on main ingredients in mixed dishes. Main ingredients would typically be the leading ingredients, in terms of quantity, in a mixed dish (Section E.2) on interviewer training).

[1] See, for example, the U.S. National Cancer Institute Dietary Assessment Primer at: https://dietassessmentprimer.cancer.gov/approach/principles.html , accessed 7 September 2020.

[2] This document does not describe quantitative dietary recall methods. In quantitative recalls, respondents estimate the quantity of each individual food and beverage consumed by the IYC and provide detailed quantitative recipes for mixed dishes. While data based on quantitative recalls can be used to generate IYCF indicators, quantitative dietary recall surveys are very complex and resource-intensive at all phases and are not further discussed in this document.

Box 1. Description of the open recall and list-based methods[a]

Open recall method

In an open dietary recall, the interviewer asks a series of standard probing questions to help the respondent(s) recall all foods consumed by the IYC the previous day and night. The interviewer also probes for main ingredients in mixed dishes. The recall begins with the time the IYC woke the previous morning, with probing questions to guide the respondent to think about the IYC's activities in a sequential manner, including all episodes of eating and drinking, until the infant went to sleep for the night. If the IYC woke in the night and ate or drank something, it should also feature in the recall. The recall period ends when the IYC wakes up on the morning of the interview day.

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

However, following the open recall, the interviewer performs a "second pass" after reviewing the recall and identifying which food groups have not been mentioned. The interviewer then uses a list-based approach to confirm whether or not the IYC consumed any item from those food groups.

List-based recall method

In the list-based recall method, **the interviewer reads out a list of foods to the respondent**. The interviewer first explains that they will read out a list of food groups and that the respondent should indicate which were consumed by the IYC during the specified recall period (previous day and night). The respondent is also instructed to consider main ingredients from mixed dishes the IYC consumed when they respond. The interviewer then reads out a list of foods organized in groups, giving multiple examples for each group. The interviewer fills in responses for each food group on the list according to the respondent's answer (i.e. "yes", "no", or "don't know").

[a] Adapted from: FAO and FHI 360. 2016. *Minimum Dietary Diversity for Women: A Guide for Measurement*. Rome: FAO, page 6.

A.7. METHODS FOR RECORDING RESPONSES

Historically, interviewers in most surveys used paper forms to record data. While paper forms are still used in some surveys, direct data entry into computers, tablets or mobile phones (also called "computer-assisted personal interviewing" (CAPI), "mobile data entry" or "mobile data capture") is increasingly popular due to its many advantages.[1]

Dietary recalls present some challenges when programming CAPI applications. CAPI approaches differ slightly for list-based and open recall methods, and challenges include coding food items into food groups, the need to scroll between food groups as they are mentioned, and the need for a "second pass" with open recalls. See **Box 2** for an overview of CAPI approaches for open and list-based recall methods.

[1] A discussion of the advantages and disadvantages of mobile data collection can be found at: CartONG. 2017. *Benchmarking of Mobile Data Collection Solutions*, pp. 5–8 at: https://blog.cartong.org/2017/08/14/mdc-benchmarking-2017/, accessed 31 August 2020.

Box 2. CAPI approaches for food group recalls

During open recalls, CAPI applications can either capture food groups only, or capture all food and ingredient items exactly as mentioned by the respondent. CAPI applications capturing food groups only are very similar for both open and list-based recall methods.

Programming to capture food groups only is much simpler but does not allow open recall interviewers or supervisors to review and correct any classification errors later. Detailed information that may be useful for other purposes is also lost.

Capturing food groups in open recalls requires the interviewer to:

a. hear correctly each item mentioned by the respondent, and correctly code it into the relevant food group listed on the device (tablet, phone, etc.);

b. identify each mixed dish mentioned by the respondent, probe for main ingredients and code the main ingredients into the correct food groups;

c. be able to scroll between all food groups since the respondent may mention items from the various food groups in any order; and

d. complete the "second pass" using a list-based approach (see below).

Capturing food groups in list-based recalls requires the interviewer to:

a. read out the questionnaire exactly as written for each food group and record responses as "yes", "no", or "don't know";

b. be able to scroll between all food groups since experience has shown that respondents may spontaneously mention items from the various food groups even when not asked; and

c. be able to scroll back among all food groups after asking the final list-based question "any other solid, semi-solid or soft food?"

Capturing all items as mentioned by the respondent in open recalls requires either:

a. lots of typing—which can interrupt the flow of the interview—and a very substantial effort to code items into food groups later; or

b. extensive presurvey work to develop comprehensive food and ingredient lists to upload into the CAPI application, along with sophisticated programming such that a drop-down list appears whenever the interviewer types in specific text or selects a food group.

   – Example: interviewer types "banana" (or simply "bana") and a drop-down list appears with "banana, raw; banana cake; banana fritter; banana pudding; fried banana; banana yogurt; banana ice cream". The interviewer selects the item and program codes the item into the correct food group.

   – Example: interviewer types or ticks "vegetable" and a drop-down appears with a list of all vegetables plus an option to enter "other" or "other, specify". This approach can be challenging to program and apply when lists are very long.

Second pass for open recall

The CAPI application ought to prompt the interviewer to complete the "second pass" using a list-based approach to query the respondent about food groups not mentioned. To accomplish this:

a. the program can provide an automated second pass by prepopulating the screen page with groups not mentioned; or

b. the interviewer can visually review previously entered data to determine groups not mentioned, and then reassess with the respondent.

B. EXAMPLE QUESTIONNAIRES

This section sets out example questionnaires. The questionnaires are similar to earlier versions[1] but include modifications required to generate the new IYCF indicators.

These questionnaires do not include other questions that are needed to confirm that respondents (when WRA are targeted) and focus IYC are in the correct age range. See **Annex 4** for resources related to selecting respondents, estimating age and other general survey methods.

The questions are broken down into four sections:

1. Questions about feeding immediately after birth
2. Questions about current breast- and bottle feeding
3. Questions about liquids
4. Questions about semi-solid and solid foods

Note that depending on survey and sample design, the first set of questions may be part of a separate survey module. The reason for this is because this set of questions is targeted at WRA: it aims to capture information for all (or most recent) live births in the last 24 months whether the IYC is living or deceased, whereas the remaining modules are concerned solely with living IYC, who may or may not reside with their mothers.

On the following pages, questions for respondents are in plain type and interviewer instructions are in *italics*. Notes for personnel using the questionnaire are in ***bold italics***. Numbering across all parts of the example questionnaire is sequential and this numbering system is referred to in Section C, in the instructions for calculating the indicators.

In the example questionnaires we use "1" as the code for "yes" and "2" for "no" but note that some surveys use "0" as the code for "no". Similarly, different surveys use different codes for "don't know" or non-applicable responses. In the example questionnaires we use a code of "9" or "99" for "don't know", but this could be replaced with another survey-specific code for "don't know".

[1] The questionnaires are similar to the example questionnaires in *WHO: Indicators for assessing infant and young child feeding practices part 2: Measurement, Geneva: 2010, and to the MICS6 and DHS8 questionnaires, found at the following links, both accessed* 31 August 2020.
MICS6: http://mics.unicef.org/tools
DHS8: https://dhsprogram.com/publications/publication-DHSQ8-DHS-Questionnaires-and-Manuals.cfm

B.1. QUESTIONS ABOUT FEEDING IMMEDIATELY AFTER BIRTH

Questions 1–3 in this section are retrospective. They ask the respondent to recollect events at the birth of the child and are asked for all live births that occurred in the last 24 months, and are thus generally applicable to women of reproductive age.

Note that the example questionnaire should not be copied and used in its current form. All text displayed in ***bold italics*** in the example questionnaire ought to be replaced by drinks or foods that are common in the survey area.

Q#	Question	Response	Code	Skip
1	Was [NAME] ever breastfed?	Yes	1	
		No	2	If "no", END questions about retrospective feeding
2	How long after birth was [NAME] first put to the breast? *If immediately, circle "000"* *If less than one hour, record "00" hours* *If less than 24 hours, record hours* *Otherwise, record days*	Immediately	000	
		Hours:	1 |___|___|	
		Days:	2 |___|___|	
3	In the first two days after delivery, was [NAME] given anything other than breast milk to eat or drink – anything at all like water, infant formula, or ***[insert common drinks and foods, including ritual feeds, that may be given to newborn infants]?***	Yes	1	
		No	2	

B.2. QUESTIONS ABOUT CURRENT BREAST- AND BOTTLE FEEDING

Questions 4 to 8 are asked for all living children under 24 months.

Q#	Question	Response	Code	Skip
4	Was [NAME] breastfed yesterday during the day or at night?	Yes	1	
		No	2	
		Don't know	9	
5	Did [NAME] drink anything from a bottle with a nipple yesterday during the day or at night?	Yes	1	
		No	2	
		Don't know	9	

B.3. QUESTIONS ABOUT LIQUIDS

Questions about liquids should be asked for all living children aged under two years.

Questions about liquids are always asked using the list-based approach. During an open recall it is easy to forget liquids, and this can result in over-estimation of exclusive breastfeeding. The list-based approach is therefore recommended for liquids.

The list-based approach also ensures that interviewers remember to ask follow-up questions about some types of liquids: this allows indicators requiring information about milk feeding frequency (for non-breastfed IYC) or sweet beverages (all IYC) to be calculated.

Note that the example questionnaire should not be copied and used in its current form. All text displayed in ***bold italics*** in the example questionnaire ought to be replaced by foods or drinks that are common in the survey area. Adapt the bold text in Question 6B (***[insert common formula names]***) and Question 6D (***[insert local names of common types of yogurt drinks]***) to reflect local examples for common infant formulas and yogurt drinks respectively. See **Table A5.1** in **Annex 5** for detailed descriptions of liquids that belong in each row of the questionnaire.

Compared to previous questionnaires, this questionnaire contains more details about liquids because of the new indicator for sweet beverages.

Liquids questionnaire

Q#	Question	Response and code			Skip
6	Now I would like to ask you about liquids that [NAME] had yesterday during the day or at night. Please tell me about all drinks, whether [NAME] had them at home, or somewhere else. Yesterday during the day or at night, did [NAME] have…?				
		YES	**NO**	**DK**	
6A	Plain water?	1	2	9	
6B	Infant formula, such as ***[insert local names of common formula]?***	1	2	9	If "no" or "DK", skip to 6C
6Bnum	*If "yes": How many times did [NAME] drink formula?* *If 7 or more, record "7"* *If number of times not known, record "9"*	|___|			

Q#	Question	Response and code			Skip
6C	Milk from animals, such as fresh, tinned or powdered milk?	1	2	9	If "no" or "DK", skip to 6D
6Cnum	*If "yes":* How many times did [NAME] drink milk? *If 7 or more, record "7"* *If number of times not known, record "9"*	|___|			
6Cswt	*If "yes":* Was the milk or were any of the milk drinks a sweet or flavoured type of milk?	1	2	9	
6D	Yogurt drinks such as ***[insert local names of common types of yogurt drinks]?***	1	2	9	If "no" or "DK", skip to 6E
6Dnum	*If "yes":* How many times did [NAME] drink yogurt? *If 7 or more, record "7"* *If number of times not known, record "9"*	|___|			
6Dswt	*If "yes":* Was the yogurt or were any of the yogurt drinks a sweet or flavoured type of yogurt drink?	1	2	9	
6E	Chocolate-flavoured drinks including those made from syrups or powders?	1	2	9	
6F	Fruit juice or fruit-flavoured drinks including those made from syrups or powders?	1	2	9	
6G	Sodas, malt drinks, sports drinks or energy drinks?	1	2	9	
6H	Tea, coffee, or herbal drinks?	1	2	9	If "no" or "DK", skip to 6I
6Hswt	*If "yes":* Was the drink/ Were any of these drinks sweetened?	1	2	9	
6I	Clear broth or clear soup?	1	2	9	
6J	Any other liquids? *If "yes":* what was the liquid or what were the liquids? _____	1	2	9	If "no" or "DK", skip to 7
6Jswt	*If "yes":* Was the drink or were any of these drinks sweetened?	1	2	9	

B.4. QUESTIONS ABOUT FOODS

Questions about foods are asked for all living children under two years.

Example items in each row of the questionnaire must be carefully adapted to context, as described in Section D. **Annex 6** provides further details on food items belonging to each group. The following points should be borne in mind.

- The example questionnaire on the following pages should not be copied and used in its current form.
- All food group rows should be adapted to include a short list of the most commonly consumed example foods for that category; all text displayed in ***bold italics*** in the example questionnaire ought to be replaced by foods and drinks that are common in the survey area.
- Annex tables with a list of example foods for each line item are available to support customization with notes on specific lines in the example questionnaires which have been particularly prone to errors.
- Certain foods mentioned in the example questionnaire may be deleted, if not commonly consumed in the survey area, and/or other commonly consumed example foods added.

Questions about foods may be asked using an open recall or list-based approach. The list of food groups is the same for both approaches, but questions for respondents are different. On the following pages we provide:

- an example questionnaire using the open recall approach;
- an example questionnaire using the list-based approach.

Note that although the preface text, some of the instructions and the final question differ between the open recall and the list-based approach, the core of the questionnaire (questions in rows 7A-7R) is the same for both methods. These rows contain lists of items which are posed as questions in a list-based questionnaire, or in the "second pass" of the open recall.

OPEN RECALL QUESTIONNAIRE FOR FOODS

Q#	Question	Response and code			Skip
7	Now I would like to ask you about everything that [NAME] ate yesterday during the day or the night. I am interested in foods your child ate whether at home or somewhere else. Think about when [NAME] woke up yesterday. Did (he/she) eat anything at that time? *If "yes" ask:* Please tell me everything [NAME] ate at that time. *Probe:* Anything else? *Record answers using the food groups below.* What did [NAME] do after that? Did he/she eat anything at that time? *Repeat this series of questions, recording in the food groups, until the respondent tells you that the child woke up this morning.* *If a mixed dish is mentioned:* *Probe:* What were the main ingredients in [MIXED DISH]? Record answers in the correct food groups 7A–7R.				

Q#	Question	Response and code			Skip
Second pass	*For each food group **not** mentioned after completing the above, ask:* Just to make sure, did [NAME] eat [FOOD GROUP ITEMS] yesterday during the day or the night?				
		YES	**NO**	**DK**	
7A	Yogurt, other than yogurt drinks?	1	2	9	If "no" or "DK", skip to 7B
7Anum	*If "yes"*: How many times did [NAME] eat yogurt? *If more than 7, record "7"* *If number of times not known, record "9"*	Number of times |___|			
7B	Porridge, bread, rice, noodles, pasta or ***[insert other commonly consumed grains from table A6.2, including foods made from grains like rice dishes, noodle dishes, etc.]?***	1	2	9	
7C	Pumpkin, carrots, sweet red peppers, squash or sweet potatoes that are yellow or orange inside? ***[any additions to this list should meet "Criteria for defining foods and liquids as 'sources' of vitamin A" described in Box A6.1]***	1	2	9	
7D	Plantains, white potatoes, white yams, manioc, cassava or ***[insert other commonly consumed starchy tubers or starchy tuberous roots that are white or pale inside from table A6.4]?***	1	2	9	
7E	Dark green leafy vegetables, such as ***[insert commonly consumed vitamin A-rich dark green leafy vegetables – see examples in table A6.5]?***	1	2	9	
7F	Any other vegetables, such as ***[insert commonly consumed vegetables from table A6.6]?***	1	2	9	
7G	Ripe mangoes, ripe papayas or ***[insert other commonly consumed vitamin A-rich fruits from table A6.7]?***	1	2	9	
7H	Any other fruits, such as ***[insert commonly consumed fruits from table A6.8]?***	1	2	9	
7I	Liver, kidney, heart or ***[insert other commonly consumed organ meats – see examples on table A6.9]?***	1	2	9	
7J	Sausages, hot dogs, ham, bacon, salami, canned meat or ***[insert other commonly consumed processed meats – see examples on table A6.10]?***	1	2	9	
7K	Any other meat, such as beef, pork, lamb, goat, chicken, duck or ***[insert other commonly consumed meat – see examples on table A6.11]?***	1	2	9	
7L	Eggs?	1	2	9	
7M	Fresh fish, dried fish or shellfish?	1	2	9	
7N	Beans, peas, lentils, nuts , seeds or ***[insert commonly consumed foods made from beans, peas, lentils, nuts, or seeds]?***	1	2	9	
7O	Hard or soft cheese such as ***[insert commonly consumed types of cheese – see examples in table A6.16]?***	1	2	9	

Q#	Question	Response and code			Skip
7P	Sweet foods such as chocolates, candies, pastries, cakes, biscuits, or frozen treats like ice cream and popsicles, or ***[insert other commonly consumed sentinel sweet foods – see examples in table A6.17]?***	1	2	9	
7Q	Chips, crisps, puffs, French fries, fried dough, instant noodles or ***[insert other commonly consumed sentinel fried and salty foods – see examples in table A6.18]?***	1	2	9	
7R	Other solid, semi-solid or soft foods? *List all other solid, semi-solid or soft foods that do not fit food groups 7A-7Q here: _____*	1	2	9	
8	How many times did [NAME] eat any solid, semi-solid or soft foods yesterday during the day or night? *If 7 or more times, record "7".* *If number of times not known, record "9"*	Number of times |___|			

LIST-BASED QUESTIONNAIRE FOR FOODS

Q#	Question	Response and code			Skip
7	Now I would like to ask you about foods that [NAME] had yesterday during the day or at night. I am interested in foods your child ate whether at home or somewhere else. Please think about snacks and small meals as well as main meals. I will ask you about different types of foods, and I would like to know whether your child ate the food even if it was combined with other foods in a mixed dish like ***[list common local examples of mixed dishes]*** Please do not answer "yes" for any food or ingredient used in a small amount to add flavour to a dish. Yesterday during the day or at night, did [NAME] eat:				
		YES	**NO**	**DK**	
7A	Yogurt, other than yogurt drinks?	1	2	9	If "no" or "DK", skip to 7B
7Anum	*If "yes": How many times did [NAME] eat yogurt?* *If more than 7, record "7"* *If number of times not known, record "9"*	Number of times |___|			
7B	Porridge, bread, rice, noodles, pasta or ***[insert other commonly consumed grains from table A6.2, including foods made from grains like rice dishes, noodle dishes etc.]?***	1	2	9	
7C	Pumpkin, carrots, sweet red peppers, squash or sweet potatoes that are yellow or orange inside? ***[any additions to this list should meet "Criteria for defining foods and liquids as 'sources' of vitamin A" described in Box A6.1]***	1	2	9	
7D	Plantains, white potatoes, white yams, manioc, cassava or ***[insert other commonly consumed starchy tubers or starchy tuberous roots that are white or pale inside from table A6.4]?***	1	2	9	

Q#	Question	Response and code			Skip
7E	Dark green leafy vegetables, such as ***[insert commonly consumed vitamin A-rich dark green leafy vegetables – see examples in table A6.5]?***	1	2	9	
7F	Any other vegetables, such as ***[insert commonly consumed vegetables from table A6.6]?***	1	2	9	
7G	Ripe mangoes or ripe papayas or ***[insert other commonly consumed vitamin A-rich fruits from table A6.7]?***	1	2	9	
7H	Any other fruits, such as ***[insert commonly consumed fruits from table A6.8]?***	1	2	9	
7I	Liver, kidney, heart or ***[insert other commonly consumed organ meats– see examples on table A6.9]?***	1	2	9	
7J	Sausages, hot dogs/frankfurters, ham, bacon, salami, canned meat or ***[insert other commonly consumed processed meats– see examples on table A6.10]?***	1	2	9	
7K	Any other meat, such as beef, pork, lamb, goat, chicken, duck or ***[insert other commonly consumed meat – see examples on table A6.11]?***	1	2	9	
7L	Eggs?	1	2	9	
7M	Fresh or dried fish or shellfish?	1	2	9	
7N	Beans, peas, lentils, nuts , seeds or ***[insert commonly consumed foods made from beans, peas, lentils, nuts, or seeds]?***	1	2	9	
7O	Hard or soft cheese such as ***[insert commonly consumed types of cheeses– see examples in table A6.16]?***	1	2	9	
7P	Sweet foods such as chocolates, candies, pastries, cakes, biscuits, or frozen treats like ice cream and popsicles, or ***[insert other commonly consumed sentinel sweet foods– see examples in table A6.17]?***	1	2	9	
7Q	Chips, crisps, puffs, French fries, fried dough, instant noodles or ***[insert other commonly consumed sentinel fried and salty foods– see examples in table A6.18]?***	1	2	9	
7R	Any other solid, semi-solid or soft food? *If "yes":* What was the food? _____ *[mark food group if it is not yet coded "yes"]*	1	2	9	
CHECK	CHECK 7A through 7R. If not a single "yes" is recorded, ask 7S. If at least one "yes" for 7A–7R, skip to 8				
7S	Did [NAME] eat any solid, semi-solid or soft food yesterday during the day or at night? *If "yes"* probe: What kind of solid, semi-solid or soft foods did [NAME] eat? *[mark food group]*	Yes .....1 [if "yes" record in 7A – 7R] No 2			If "no", **ENTER "0" for 8**
8	How many times did [NAME] eat any solid, semi-solid or soft foods yesterday during the day or night? *If 7 or more times, record "7"* *If number of times not known, record "9"*	Number of times |___|			

C. INSTRUCTIONS FOR CALCULATING INDICATORS AND AREA GRAPH VALUES

This section provides instructions for calculating indicators following the presentation and numbering of survey questions in the example questionnaire. For each indicator below, we present the indicator definition followed by instructions for calculating the indicator value. Based on the instructions for the 16 IYCF indicators, the text below describes how to calculate the values needed to construct the area graphs.

See **Annex 7** for the syntax needed to calculate the indicators and construct the area graphs.

Besides the questions in the example questionnaire, correct calculation depends on correct determination of child age in days. See **Annex 4** for resources related to determining child age in days. Generally, age is calculated based on the IYC's full date of birth (i.e. known DD, MM and YYYY) and interview date. When month and year of birth are known, but the exact day of birth is unknown, the day of birth should be imputed during data processing before the age in days is calculated.

See **Box 3** for a description of how to handle missing information.

Box 3. Handling of missing information when calculating IYCF indicators

Types of missing information

Missing information includes: 1) "don't know" responses; 2) questions accidentally left blank; and 3) responses with inconsistent or illogical codes owing to recording or data entry errors. Note that use of CAPI applications usually eliminates or minimizes 2) and 3).

Missing information for current breastfeeding

This information is needed for many indicator calculations. If this information is missing, the child is assumed to be **not breastfed**.

Other missing information in the numerator

Indicator calculations on pp. 33-40 (aslo see **Annex 7**) show the exact (criterion) response codes that define whether an IYC is included in the numerator. For example, for the "ever breastfed" (EvBF) indicator, the response to Q1 must be 1. If the response for Q1 is missing (either blank or an inconsistent/illogical code) the IYC does not count in the numerator but will be included in the denominator.

Other than for current breastfeeding status, missing information for the numerator is never recoded to the value (criterion) that defines the indicator. Like the EvBF example above, for all other indicators where the criterion response is "yes", when information is missing the IYC does not count in the numerator but will be included in the denominator. The numerator is calculated only on "yes" responses.

When the criterion response is "no" (e.g. for the new indicator "Zero vegetable or fruit consumption") and information is missing, the IYC does not count in the numerator but will be included in the denominator. Similarly, for the "Exclusively breastfed" indicator, all responses to liquid and food questions must be "no". If there are missing data for any liquid or food question, the IYC is considered **not** exclusively breastfed. The numerator is calculated only on "no" responses.

An exception exists where blanks are recoded "0" for certain questions before the numerator is calculated when tallying different types of milk feeds. See calculation instructions for MMF and MMFF, pp. 36.

Missing information in the denominator

For most indicators, the only information required to indicate whether a child belongs in the denominator is the child's age. The IYC's age must be determined or estimated (see **Annex 4**). When calculating each indicator, include all IYC in the indicator-specific age range, regardless of whether there is missing information in the numerator.

For one indicator (MMFF) the denominator also includes information on current breastfeeding status. This information is only very rarely missing. In these rare cases, as noted above, the IYC is considered to be not breastfed, and all IYC in the age range will be included in the indicator calculation.

1. EVER BREASTFED (EvBF)

Definition: Percentage of children born in the last 24 months who were ever breastfed.

Numerator: Children born in the last 24 months who were ever breastfed.

Denominator: Children born in the last 24 months.

This indicator is calculated based on **Question 1** in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} < 730 \textbf{ AND } Q1 = 1}{\text{Age in days} < 730} \text{ X } 100$$

2. EARLY INITIATION OF BREASTFEEDING (EIBF)

Definition: Percentage of children born in the last 24 months who were put to the breast within one hour of birth.

Numerator: Children born in the last 24 months who were put to the breast within one hour of birth.

Denominator: Children born in the last 24 months.

This indicator is calculated based on **Question 2** in the example questionnaire, which asks how long after birth the baby was put to the breast. The code "0" for **Q2** in the numerator below is the response option for "immediately" displayed as "000" in the questionnaire. Since it is coded as a dataset number, it is shown below as "0". The code "100" for **Q2** below is the code for less than one hour after birth. Only responses of "immediately" ("000" in the questionnaire and "0" in the dataset) and "less than 1 hour" ("100" in both the questionnaire in the dataset) follow the definition for early initiation.

Calculation:

$$\frac{\text{Age in days} < 730 \textbf{ AND } (Q2 = 0 \textbf{ OR } Q2 = 100)}{\text{Age in days} < 730} \text{ X } 100$$

3. EXCLUSIVELY BREASTFED FOR THE FIRST TWO DAYS AFTER BIRTH (EBF2D)

Definition: Percentage of children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth.

Numerator: Children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth.

Denominator: Children born in the last 24 months.

This indicator is calculated based on **Question 3** in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} < 730 \textbf{ AND } Q3 = 2}{\text{Age in days} < 730} \text{ X } 100$$

4. EXCLUSIVE BREASTFEEDING UNDER SIX MONTHS (EBF)

Definition: Percentage of infants 0–5 months of age who were fed exclusively with breast milk during the previous day.

Numerator: Infants 0–5 months of age who were fed exclusively with breast milk during the previous day.

Denominator: Infants 0–5 months of age.

This indicator is calculated based on **Questions 4, 6** and **7** in the example questionnaire. **Question 4** asks whether the child was breastfed yesterday during the day or at night. **Questions 6** and **7** ask about liquids and foods, respectively, that the child consumed yesterday in the daytime or at night.

Calculation:

$$\frac{\text{Age in days} < 183 \textbf{ AND } Q4 = 1 \textbf{ AND } (Q6A\text{-}Q6J \text{ all} = 2) \textbf{ AND } (Q7A\text{-}Q7R \text{ all} = 2)}{\text{Age in days} < 183} \text{ X } 100$$

5. MIXED MILK FEEDING UNDER SIX MONTHS (MixMF)

Definition: Percentage of infants 0–5 months of age who were fed formula and/or animal milk in addition to breast milk during the previous day.

Numerator: Infants 0–5 months of age who were fed formula and/or animal milk in addition to breast milk during the previous day.

Denominator: Infants 0–5 months of age.

This indicator is calculated based on **Questions 4** and **6** in the example questionnaire. **Question 4** asks whether the child was breastfed yesterday during the day or at night. **Question 6** asks about liquids that the child consumed yesterday during the day or at night. Infant formula and any animal milk count when calculating the numerator for this question.

Calculation:

$$\frac{\text{Age in days} < 183 \textbf{ AND } Q4 = 1 \textbf{ AND } (Q6B = 1 \textbf{ OR } Q6C = 1)}{\text{Age in days} < 183} \text{ X } 100$$

6. CONTINUED BREASTFEEDING 12–23 MONTHS (CBF)

Definition: Percentage of children 12–23 months of age who were fed breast milk during the previous day.

Numerator: Children 12–23 months of age who were fed breast milk during the previous day.

Denominator: Children 12–23 months of age.

This indicator is calculated based on **Question 4** in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} \geq 365 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } Q4 = 1}{\text{Age in days} \geq 365 \textbf{ AND } \text{Age in days} < 730} \text{ X } 100$$

7. INTRODUCTION OF SOLID, SEMI-SOLID OR SOFT FOODS 6–8 MONTHS (ISSSF)

Definition: Percentage of infants 6–8 months of age who consumed solid, semi-solid or soft food during the previous day.

Numerator: Infants 6–8 months of age who consumed solid, semi-solid or soft foods during the previous day.

Denominator: Infants 6–8 months of age.

This indicator is calculated based on **Question 7** in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 274 \textbf{ AND } (\text{any of Q7A-Q7R} = 1)}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 274} \text{ X } 100$$

8. MINIMUM DIETARY DIVERSITY 6–23 MONTHS (MDD)

Definition: Percentage of children 6–23 months of age who consumed foods and beverages from at least five out of eight defined food groups during the previous day.

Numerator: Children 6–23 months of age who consumed foods and beverages from ≥ five food groups during the previous day.

Denominator: Children 6–23 months of age.

This indicator is calculated based on **Questions 4**, **6** and **7** in the example questionnaire. **Question 4** asks whether the child was breastfed yesterday during the day or at night. **Questions 6** and **7** ask about liquids and foods, respectively, that the child consumed yesterday during the day or at night.

This indicator is calculated in two steps. The first step is to construct a **food group score** summing the eight defined food groups. The eight defined food groups are:

- breast milk;
- grains, white/pale starchy roots, tubers and plantains;
- beans, peas, lentils, nuts and seeds;
- dairy products (milk, infant formula, yogurt, cheese);
- flesh foods (meat, fish, poultry, organ meats);
- eggs;
- vitamin A-rich fruits and vegetables; and
- other fruits and vegetables.

Construct the food score as follows:

Begin with a score of 0. For each of the 8 food groups, add one point if any food in the group was consumed.

See **Annex 8** for a table illustrating how rows in the questionnaire correspond to the eight MDD food groups.

Food group 1 Add 1 point if: Q4 = 1

Food group 2 Add 1 point if: Q7B = 1 **OR** Q7D = 1

Food group 3 Add 1 point if: Q7N = 1

Food group 4 Add 1 point if: Q6B = 1 **OR** Q6C = 1 **OR** Q6D = 1 **OR** Q7A = 1 **OR** Q7O = 1

Food group 5 Add 1 point if: Q7I = 1 **OR** Q7J = 1 **OR** Q7K = 1 **OR** Q7M = 1

Food group 6 Add 1 point if: Q7L = 1

Food group 7 Add 1 point if: Q7C = 1 **OR** Q7E = 1 **OR** Q7G = 1

Food group 8 Add 1 point if: Q7F = 1 **OR** Q7H = 1

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } \text{Food group score} \geq 5}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730} \times 100$$

9. MINIMUM MEAL FREQUENCY 6–23 MONTHS (MMF)

Definition: Percentage of children 6–23 months of age who consumed solid, semi-solid or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more during the previous day.

Numerator: Breastfed children 6–23 months of age who consumed solid, semi-solid or soft foods the minimum number of times or more during the previous day;

OR

Numerator: Non-breastfed children 6–23 months of age who consumed at least four solid, semi-solid or soft food feeds or milk feeds during the previous day, with at least one of the four being a solid, semi-solid or soft food feed.

Denominator: Children 6–23 months of age.

For breastfed children, this indicator is calculated based on **Question 4** and **Question 8** in the example questionnaire. **Question 4** asks whether the child was breastfed yesterday during the day or at night. **Question 8** asks about the frequency of feeding solid, semi-solid and soft foods during the previous day. For breastfed children, the minimum number of times varies with age (twice if aged 6–8 months and three times if aged 9–23 months).

For non-breastfed children, the indicator is calculated based on **Question 4** and **Question 8** as for breastfed children as well as on **Question 6** (liquids in the previous day), because milk feeds are also counted for non-breastfed children. Infant formula (**Q6B**), animal milk (**Q6C**) and yogurt drinks (**Q6D**) all count as milk feeds. **Questions Q6Bnum**, **Q6Cnum** and **Q6Dnum** refer to the frequency of feeding infant formula, animal milk and liquid yogurt drinks, respectively. Note that when counting the number of solid, semi-solid or soft foods

(including milk feeds) for non-breastfed children, it is not necessary to add in the number of semi-solid yogurt feeds (**Q7Anum**) since semi-solid yogurt is already included in **Question 8**.

For non-breastfed children the minimum number of times does not vary by age (four times for all children 6–23 months). Both solid, semi-solid or soft foods and milk feeds can count, but non-breastfed children must receive at least one non-fluid feed (i.e. solid, semi-solid or soft food).

Questions Q6Bnum, **Q6Cnum** and **Q6Dnum** should be scored "0" for "0 times" if they were skipped due to the child not consuming the item, or if responses are missing. **Q8** should also be scored "0" if responses are missing.

Calculation:

(Age in days ≥183 **AND** Age in days <274 **AND** Q4=1 **AND** Q8 ≥2)

OR

(Age in days ≥274 **AND** Age in days <730 **AND** Q4=1 **AND** Q8 ≥3)

OR

$$\frac{\text{(Age in days} \geq 183 \textbf{ AND Age in days} < 730 \textbf{ AND } Q4 \neq 1 \textbf{ AND } (Q6Bnum + Q6Cnum + Q6Dnum + Q8) \geq 4 \textbf{ AND } Q8 \geq 1}{\text{Age in days} \geq 183 \textbf{ AND Age in days} < 730} \times 100$$

10. MINIMUM MILK FEEDING FREQUENCY FOR NON-BREASTFED CHILDREN 6–23 MONTHS (MMFF)

Definition: Percentage of non-breastfed children 6–23 months of age who consumed at least two milk feeds during the previous day.

Numerator: Non-breastfed children 6–23 months of age who consumed at least two milk feeds during the previous day.

Denominator: Non-breastfed children 6–23 months of age.

This indicator is calculated based on **Questions 4, 6** and **7** in the example questionnaire. **Question 4** asks whether the child was breastfed yesterday during the day or at night. **Questions 6** and **7** ask about liquids and foods, respectively that the child consumed yesterday during the day or at night. Infant formula (**Q6B**), animal milk (**Q6C**), yogurt drinks (**Q6D**) and semi-solid yogurt (**Q7A**) all count as milk feeds. Questions **Q6Bnum**, **Q6Cnum**, **Q6Dnum** and **Q7Anum** refer to the frequency of feeding infant formula, animal milk, liquid yogurt drinks and semi-solid yogurt, respectively.

Questions Q6Bnum, **Q6Cnum**, **Q6Dnum** and **Q7Anum** should be scored "0" for "0 times" if they were skipped due to the child not consuming the item, or if responses are missing.

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND Age in days} < 730 \textbf{ AND } Q4 \neq 1 \textbf{ AND } (Q6Bnum + Q6Cnum + Q6Dnum + Q7Anum) \geq 2}{\text{Age in days} \geq 183 \textbf{ AND Age in days} < 730 \textbf{ AND } Q4 \neq 1} \times 100$$

11. MINIMUM ACCEPTABLE DIET 6–23 MONTHS (MAD)

Definition: Percentage of children 6–23 months of age who consumed a minimum acceptable diet during the previous day.

Numerator: Children 6–23 months of age who consumed at least the minimum dietary diversity and minimum meal frequency during the previous day **AND** are either breastfed or consumed the minimum milk feeding frequency during the previous day.

Denominator: Children 6–23 months of age.

This indicator is based on **Questions 4, 6, 7** and **8** in the example questionnaire. This indicator is a "composite" of the three previous indicators:

Indicator 8: Minimum dietary diversity (MDD)

Indicator 9: Minimum meal frequency (MMF)

Indicator 10: Minimum milk feeding frequency (MMFF)

Calculation:

For breastfed infants, if MDD and MMF are both achieved, then MAD is achieved. For non-breastfed infants, if MDD, MMF and MMFF are all achieved, then MAD is achieved.

This indicator is calculated in two steps. The first step is to calculate the three component parts and code each part "1" for "yes, achieved" and "2" for "no" for each individual IYC, for all three component parts. Once these three indicators have been calculated, MAD can be estimated as:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } \text{MDD} = 1 \textbf{ AND } \text{MMF} = 1 \textbf{ AND } (\text{Q4} = 1 \textbf{ OR } \text{MMFF} = 1)}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730} \times 100$$

12. EGG AND/OR FLESH FOOD CONSUMPTION 6–23 MONTHS (EFF)

Definition: Percentage of children 6–23 months of age who consumed egg and/or flesh food during the previous day.

Numerator: Children 6–23 months of age who consumed egg and/or flesh food during the previous day.

Denominator: Children 6–23 months of age.

This indicator is calculated based on **Question 7** in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } (\text{Q7I} = 1 \textbf{ OR } \text{Q7J} = 1 \textbf{ OR } \text{Q7K} = 1 \textbf{ OR } \text{Q7L} = 1 \textbf{ OR } \text{Q7M} = 1)}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730} \times 100$$

13. SWEET BEVERAGE CONSUMPTION 6–23 MONTHS (SwB)

Definition: Percentage of children 6–23 months of age who consumed a sweet beverage during the previous day.

Numerator: Children 6–23 months of age who consumed a sweet beverage during the previous day.

Denominator: Children 6–23 months of age.

This indicator is calculated based on **Question 6** in the example questionnaire. **Question 6** asks about liquids that the child consumed yesterday during the day or at night. For certain types of liquids (animal milk (**Q6C**), yogurt drinks (**Q6D**), tea, coffee or herbal drinks (**Q6H**) and "other" drinks (**Q6J**)) the respondent is asked whether the drink was sweetened. There are also questions about chocolate drinks (**Q6E**), fruit juice or fruit flavoured drinks (**Q6F**), and sodas, malt drinks, sports drinks or energy drinks (**Q6G**), which are all assumed to be sweet.

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } (\text{Q6Cswt} = 1 \textbf{ OR } \text{Q6Dswt} = 1 \textbf{ OR } \text{Q6E} = 1 \textbf{ OR } \text{Q6F} = 1 \textbf{ OR } \text{Q6G} = 1 \textbf{ OR } \text{Q6Hswt} = 1 \textbf{ OR } \text{Q6Jswt} = 1)}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730} \text{ X } 100$$

14. UNHEALTHY FOOD CONSUMPTION 6–23 MONTHS (UFC)

Definition: Percentage of children 6–23 months of age who consumed selected sentinel unhealthy foods during the previous day.

Numerator: Children 6–23 months of age who consumed selected sentinel unhealthy foods during the previous day.

Denominator: Children 6–23 months of age.

This indicator is calculated based on **Question 7P** (sentinel sweet foods) and **Question 7Q** (sentinel fried and salty foods) in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } (\text{Q7P} = 1 \textbf{ OR } \text{Q7Q} = 1)}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730} \text{ X } 100$$

15. ZERO VEGETABLE OR FRUIT CONSUMPTION 6–23 MONTHS (ZVF)

Definition: Percentage of children 6–23 months of age who did not consume any vegetables or fruits during the previous day.

Numerator: Children 6–23 months of age who did not consume any vegetables or fruits during the previous day.

Denominator: Children 6–23 months of age.

This indicator is calculated based on **Questions 7C** (vitamin A-rich yellow/orange vegetables), **Q7E** (dark green leafy vegetables), **Q7F** (other vegetables), **Q7G** (vitamin A-rich fruits) and **Q7H** (other fruits) in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730 \textbf{ AND } \text{Q7C} = 2 \textbf{ AND } \text{Q7E} = 2 \textbf{ AND } \text{Q7F} = 2 \textbf{ AND } \text{Q7G} = 2 \textbf{ AND } \text{Q7H} = 2}{\text{Age in days} \geq 183 \textbf{ AND } \text{Age in days} < 730} \text{ X } 100$$

16. BOTTLE FEEDING 0–23 MONTHS (BoF)

Definition: Percentage of children 0–23 months of age who were fed from a bottle with a nipple during the previous day.

Numerator: Children 0–23 months of age who were fed from a bottle with a nipple during the previous day.

Denominator: Children 0–23 months of age.

This indicator is calculated based on **Question 5** in the example questionnaire.

Calculation:

$$\frac{\text{Age in days} < 730 \textbf{ AND } Q5 = 1}{\text{Age in days} < 730} \text{ X } 10$$

17. INFANT FEEDING AREA GRAPHS (AG)

This section explains how to use data from the example questionnaire to construct the area graphs. Firstly, **Table 4** and **Table 5** provide more detailed explanations of the feeding categories that are illustrated in the area graphs. In **Table 4**, the IYC is "placed" in the first category (row) that best describes her or his feeding. Based on the definitions provided in **Table 5**, **Table 6** shows how questions from the questionnaire are used to "place" each child in one of the feeding categories.

For further details, see **Annex 7**, which provides the syntax for constructing the graphs.

Table 4. Summary of liquids/food given yesterday during the day or at night, by feeding category[a]

	Liquids/foods				
Feeding category	**Breast milk**	**Plain water**	**Non-milk liquids**	**Animal milk/infant formula**	**Solid, semi-solid and soft foods**
Not breastfed	No	Yes or no	Yes or no	Yes or no	Yes or no
Breast milk and solid, semi-solid and soft foods	Yes	Yes or no	Yes or no	Yes or no	Yes
Breast milk and animal milk and/or formula	Yes	Yes or no	Yes or no	Yes	No
Breast milk and non-milk liquids	Yes	Yes or no	Yes	No	No
Breast milk and plain water	Yes	Yes	No	No	No
Breast milk only (exclusively breastfed)	Yes	No	No	No	No

[a] In this table, "Yes or no" means that the IYC may or may not have consumed the item. For example, if a child is not breastfed, irrespective of other liquids/foods consumed, it will always be placed in the "Not breastfed" feeding category in the area graph. Questionnaire responses for plain water, other liquids and solids/semi-solids can all be either "yes" or "no".

Table 5. Definitions of feeding categories

Not breastfed	Breast milk + solid, semi-solid and soft foods	Breast milk + animal milk and/or formula	Breast milk + non-milk liquids	Breast milk + plain water	Breast milk only (exclusively breastfed)
IYC not fed any breast milk yesterday during the day or at night.	IYC fed breast milk **plus** solid, semi-solid or soft foods from any food group yesterday during the day or at night.	IYC fed breast milk **plus** animal milk and/or formula/ yogurt drinks yesterday during the day or at night.	IYC fed breast milk **plus** non-milk liquids (e.g. juice, herbal tea, sweetened water-based beverages) yesterday during the day or at night.	IYC fed only breast milk **plus** plain water yesterday during the day or at night.	IYC fed only breast milk yesterday during the day or at night.
IYC in this category may have been fed plain water, non-milk liquids, animal milk/ infant formula/yogurt drinks, and/or solid, semi-solid and soft foods.	IYC in this category may also have been fed plain water, non-milk liquids, and/or animal milk/infant formula/yogurt drinks.	IYC in this category may also have been fed plain water, and/or non-milk liquids.	IYC in this category may also have been fed plain water.		
IYC in this category were not fed breast milk		IYC in this category were not fed any solid, semi-solid, or soft foods.	IYC in this category were not fed any animal milk/ infant formula/ yogurt drinks nor any solid, semi-solid or soft foods.	IYC in this category were not fed any animal milk/ infant formula/ yogurt drinks, nor any non-milk liquids other than plain water, nor any solid, semi-solid or soft foods.	IYC were not fed anything else: no plain water, no animal milk/ infant formula/ yogurt drinks, no non-milk liquids, and no solid, semi-solid or soft foods.

Table 6. Operational definition of feeding categories[a,b]

Feeding category	How to define based on questions from example questionnaire
Not breastfed	Q4 ≠ 1
Breast milk and solid, semi-solid and soft foods	Q4 = 1 **AND** (**ANY** of Q7A-Q7R = 1)
Breast milk and animal milk or formula	Q4 = 1 **AND** (Q6B = 1 **OR** Q6C = 1 **OR** Q6D = 1) **AND** (**ALL** Q7A-Q7R = 2)
Breast milk and non-milk liquids	Q4 = 1 **AND** (**ANY** of Q6E-Q6J = 1) **AND** (Q6B = 2 **AND** Q6C = 2 **AND** Q6D = 2) **AND** (**ALL** Q7A – Q7R = 2)
Breast milk and plain water	Q4 = 1 **AND** Q6A = 1 **AND** (**ALL** Q6B – Q6J = 2) **AND** (**ALL** Q7A-Q7R = 2)
Breast milk only (exclusively breastfed)	Q4 = 1 **AND** (**ALL** Q6A – Q6J = 2) **AND** (**ALL** Q7A-Q7R = 2)

[a] These categories may not add up to 100% if there are missing data. Where this is the case, the area graph should include an area with the legend indicating that the area represents "unknowns" due to missing data.

[b] The area graphs only provide information on infants under 6 months of age. For all of these categories the age in days is less than 183.

D. RECOMMENDATIONS FOR ADAPTING THE QUESTIONNAIRE TO SURVEY CONTEXT

D.1. GENERAL APPROACH

Because foods and feeding practices are specific to contexts and cultures, the IYCF example questionnaire should always be adapted to include typical liquids and foods consumed by IYC in the survey area(s). In addition, the questionnaire must be translated into all survey languages, pretested and piloted. See **Annex 4** for resources on best practices for translation and for broader guidance on survey procedures.

Adapting the liquid (Question 6) and food (Question 7) groups listed in the example questionnaire requires appropriate local expertise related to available foods and drinks and IYCF practices. Adaptation of Questions 6 and 7 requires good understanding of what "belongs" in each of the liquid and food groups in the questionnaire, as described in detail in **Annex 5** and **Annex 6**. Question 3 about foods and liquids consumed in the first two days after birth (including ritual feeds) also requires adaptation but does not have associated annexes. It should however be adapted and apprised based on consultations with local experts.

The questionnaire should also be linguistically and culturally adapted (see **Annex 4** for links to resources on this topic).

For each liquid and food group listed in the questionnaire, the aim is to identify a set of the most commonly consumed example items, and to list these items in the adapted questionnaire.

The list of example items for each food group cannot and should not be exhaustive. If lists are too long, they become cognitively difficult for respondents to grasp as questions. At the same time, items not on the adapted questionnaire may be missed when the list-based method is used.

Based on recent methodological work, Herforth et al. *(49)* suggest limiting the number of example items per food group in list-based questionnaires to seven or fewer, whenever possible. They recommend splitting groups into two when needed (e.g. when there are 8–14 commonly consumed items).[1] In very large countries with strong geographic variations in foods consumed and where lists of commonly consumed example items are likely to be very long, more than one version of the questionnaire can be prepared if feasible.

When using the open recall method, correct categorization of items not listed in the questionnaire will depend on the interviewers' understanding of the food groups. Job aids can be designed to provide more extensive lists of examples for each food group. These can be developed in partnership with local experts by selecting from the items in **Annex 6** and refining the lists. They can then be used both during training and as job aids to help interviewers in the field. These job aids may also be helpful in survey training using the list-based approach, since respondents sometimes ask the interviewer whether a food item "counts" for the group the interviewer has read from the questionnaire.

[1] Note that whenever questionnaire rows are split or questions added, the question numbers change: tabulation/calculation instructions should be adjusted accordingly.

Box 4 provides general suggestions on how to begin adapting the questionnaire. **Annex 5** provides further description of the liquid groups in Question 6, and **Annex 6** provides detailed lists of examples for each food group/row in Question 7. **Annex 6** also provides a brief discussion of fortified foods and products, and how to classify them.

Box 4. Suggested methods of adapting food group recall questionnaires

Identify local experts

Adapting the questionnaire requires input from local nutrition experts. In addition to one or more experts in food and nutrition, the team needs a local or international expert with specific experience in adapting food group recall questionnaires. Depending on the objectives, geographic scope and ownership of the survey, local experts may be drawn from nutrition units within government ministries, academia and/or UN and NGO nutrition technical staff. Field staff with local knowledge of diets in survey areas can also contribute to the final stages of adaptation.

Learn from any previous IYCF questionnaires

Obtain and review example items for liquid and food groups in previous questionnaires, and if possible discuss previous survey experiences with lead field staff. Note however that the current example questionnaire is slightly different from previous versions to allow data capture for new indicators; and some previous IYCF questionnaires may have item classification errors per group, which will need correction.

Obtain available quantitative or semi-quantitative data on dietary intake[a]

The ideal data source is a recent and representative survey of IYC dietary intake in the same geographic area. This is rarely available, so smaller surveys and surveys of other population groups (older children and adults) may need to be consulted. These surveys can be used to identify the most commonly consumed items in each liquid and food group (e.g. types of fruit and vegetables most often given to IYC in the survey area(s)). Often, only a small number of items per group are commonly consumed. When using survey data from other population groups, consult local IYCF experts to ensure that special foods commonly prepared for IYC only are included in example lists.

Engage with experts

There are multiple ways to engage with experts, including one-on-one meetings and in groups. The best approach will depend on available resources and whether there is a need to engage diverse stakeholders to increase ownership and confidence in the survey outcome.

One option is to convene experts for virtual or in-person meetings to discuss and adapt the questionnaire. Depending on the specific survey process, these meetings may also be good venues for discussing and developing plans and written resources for interviewer training. Ideally, lead field staff for the upcoming survey should also be present.

Adaptation can be incremental and repeated, with further revisions based on input received during field staff training. This may be particularly useful for revising job aids containing longer lists of items for each food group.

Consider seasonal foods

In addition to geographic variations relating to the most commonly consumed foods, consider seasonal variations and aim to include example foods that will be available and commonly consumed when the planned survey takes place.

[a] Data should be reviewed whenever available, although sources are often not available or organized for ready exploitation. Herforth et al. *(49)* provide an example of using quantitative data to develop example lists of items per food group.

D.2. ADAPTING THE FOOD GROUPS TO INCLUDE SENTINEL UNHEALTHY FOODS

IYCF indicators were originally focused on nutrient and energy adequacy in IYC diets. As described in Part 1, there are now rising concerns about nutrition transitions and thus a need to monitor a wider range of IYC diet quality issues. This calls for new indicators to capture some aspects of unhealthy practices.

In addition to the information needed for the sweet beverage consumption indicator (**Q6**), the example questionnaire aims to capture information on consumption of two types of sentinel unhealthy foods: sentinel sweet foods (**Q7P**) and sentinel fried and salty foods (**Q7Q**). Adapting the questionnaire rows for these two groups of sentinel foods should follow the same process for adapting other questionnaire rows. As with other food groups, the aim should be to include those items within each group that are most commonly consumed by IYC within the survey area. More detailed lists of examples are given in **Annex 6**.

One difference between these groups and other food groups is that they include many processed food items that may be available at local markets as hundreds of different individual items. However, the types of foods selected as sentinels can usually be grouped into a relatively small number of subcategories (e.g. candies, pastries, cakes, cookies and frozen sweets) for listing under these two questions.

SWEET VS. SALTY FOODS

In the questionnaire, one of the two sentinel groups relates to sweet foods and the other to salty and fried foods. In some food cultures however, many items are both sweet and salty. For the purpose of the IYCF indicators, it does not matter if a particular item is grouped with the sweet (**Q7P**) or the salty items (**Q7Q**). The objective is that taken together these two rows of the questionnaire capture information on the most common unhealthy food items of concern in IYC feeding.

D.3. OPTIONAL LIQUID AND FOOD GROUPS

During questionnaire adaptation, survey planners may also choose to add rows to the questionnaire to capture information about liquid and food groups that are of interest but are not represented in the example questionnaire. Optional groups include types of beverages and foods that are very rarely or never consumed by IYC in some areas but common in other areas. There is also an optional food group for "other fats and oils". Examples of optional groups that may be of interest include:

- soy milk and nut milk;
- insects and other small protein foods;
- red palm oil; and
- other fats and oils.

Note that if any of these items is added to the questionnaire, it will change the question numbering used in the calculations. **Indicator calculations should be reviewed carefully and adapted as needed if rows are added and questions renumbered.**

SOY AND NUT MILK

When adapting the questionnaire, there are two options for eliciting information on soy and nut milk:

1. add a row to the liquids questionnaire, and also insert a follow-up question on whether or not the soy or nut milk was sweetened;
2. consider these as "other liquids", i.e. trust that the respondent will think of these and respond "yes" to Q6J "Any other liquids?" if the IYC has received soy or nut milk.

This judgement call is best made with local knowledge about how commonly such products are given to IYC. If relatively common, consider adding a row and specifying the most common type(s) of nut milk (e.g. "Soy milk or almond milk"). If such products are missed, exclusive breastfeeding may be overestimated. Deciding to add a row also depends on whether information about consumption of these specific drinks is of interest for any programmatic reason.

When a row is added for soy and nut milk, a follow-up question on sweetness should also be inserted and indicator calculations adjusted accordingly. The EBF calculation should be adjusted so that if the answer for soy or nut milk is "yes", the infant is identified as not exclusively breastfed. Soy and nut milk do **not** count as milk feeds, dairy or legumes/nuts, so they are not included in calculations for MMFF, MDD, MFF or MAD. If sweetened however, they do count as sweet beverages and the SwB calculation should be adjusted to include the follow-up question on sweetness for these "milks".

INSECTS AND OTHER SMALL PROTEIN FOODS

This is a diverse group of miscellaneous nutrient-dense foods, including:

- fish roe;
- insects;
- insect eggs;
- insect larvae (grubs, caterpillars);
- snails;
- spiders; and
- any other small invertebrates.

This group may be of interest in some contexts, because there is renewed recognition of the role insects play in meeting nutrient needs and in sustainable diets in some regions (see, for example, FAO *(50)*). This category does not include frogs, snakes or other reptiles and amphibians, which are included in the "Other meat and poultry" group.

When a row is added for this group, the EBF calculation should be adjusted so that if the answer for the "Insects and small protein foods" group is "yes", the infant is identified as not exclusively breastfed. This group is not included in any other indicator calculation.

RED PALM OIL

Red palm oil is derived from the oily pulp of the red palm fruit and is very rich in vitamin A.[1] If desired by survey planners, a row for red palm oil can be added to the food group list during questionnaire adaptation.

Red palm fruit

Note that the red palm fruit and pulp themselves, although very oily, are considered as fruit and listed among the vitamin A-rich fruits (see **Annex 6**). In some places, the pulp and/or entire fruit are used in soups and stews and may be called "red palm nut sauce", although derived from the flesh rather than the kernel (seed) of the plant. Where relevant and commonly consumed by IYC, red palm fruit should be listed as an example in the "Vitamin A-rich fruit" group.

Red palm oil

Red palm oil is not a fruit, so if survey planners wish to elicit information about IYC consumption of red palm oil on the recall day, it must be listed in a separate row.

When a row is added for this group, the EBF calculation should be adjusted so that if the answer for red palm oil is "yes", the infant is identified as not exclusively breastfed. This group is not included in any other indicator calculation.

OTHER FATS AND OILS

This category includes all solid fats and liquid oils other than red palm oil, including those of plant or animal origin. Oils and fats are commonly consumed by IYC. However, in certain countries or contexts, there may be a concern about whether IYC consume any fat at all from complementary foods. In these settings, survey planners may wish to add a row to the questionnaire to estimate the proportion of IYC consuming any type of fat or oil on the recall day.

Where a separate row for red palm oil is not added to the questionnaire, it can be included in "Other fats and oils".

A row should be added to the questionnaire listing the most commonly consumed types of fats and oils, as below:

- butter;
- ghee/clarified butter;
- cream;
- sour cream;
- lard, suet, tallow (animal fats);
- margarine, shortening (hydrogenated vegetable oil);
- palm oil (not red palm oil unless there is no separate row added for red palm oil);
- vegetable/fruit/nut/seed oils (e.g. oils made from canola, coconut, cottonseed, groundnut, maize, olives, rapeseed, safflower, sesame, soybean, sunflower, mustard or walnuts); and
- any other oil extracted from a nut, seed or grain.

[1] Palm oil pressed from the kernel (seed) of the red palm is not rich in vitamin A. Certain types of red palm oil processing also reduces vitamin A content.

Note: In many surveys, respondents will not know the type of oil consumed. Either labelling is insufficient and/or oils are locally produced and repackaged into unlabelled containers or sachets. Such oils can still be classified as "Other oil or fat".

When a row is added for this group, the EBF calculation should be adjusted so that if the answer for "Other fats and oils" is "yes", the infant is identified as not exclusively breastfed. This group is not included in any other indicator calculation.

E. SELECTING AND TRAINING INTERVIEWERS[1]

E.1. INTERVIEWER SELECTION

It is ideal to use interviewers who have some training in nutrition or who have been interviewers in previous nutrition surveys. This is particularly important for food group recall using the open recall method, since this method places the onus on the interviewer to classify reported foods and ingredients in the correct questionnaire rows. Interviewers should also have direct personal experience in shopping for and preparing local foods for IYC.

When the IYCF module is included in large-scale, multifaceted surveys, it might not be possible to select interviewers with the requisite range of knowledge and survey experience. Whatever the case, we recommend that interviewers have some post-high school education and experience in survey methodology and interviewing.

E.2. INTERVIEWER TRAINING FOR LIQUID AND FOOD GROUP RECALLS

This section highlights a few topics and issues unique to training interviewers for the liquid and food group recalls, because these two sections of the questionnaire require the most specialized training. Other sections of the IYCF questionnaire (early feeding and current breast- and bottle feeding) are more straightforward.

We do not cover training issues which apply to all survey modules such as obtaining consent, establishing rapport and a respectful atmosphere, asking questions as written in the questionnaire, correct use of filtering questions and skips and neutral probing. See **Annex 4** for other more comprehensive resources on interviewer training.

Training for the liquid and food group recalls should include classroom instruction, discussion and field practice. Classroom training ought to include role-playing and other interactive activities. Whenever possible, we recommend at least two rounds of field practice, review of filled questionnaires and debriefing.

When using CAPI, trainers may start training immediately with software and devices, or train first with paper forms and move on to the CAPI application later. The choice of approach depends on the overall survey context and the previous training and experience of the interviewer trainees.

The following scheme provides some topics and activities to consider when designing interviewer training. **Table 7** lists training materials and supplies. The uses to which they can be put are further described in the section immediately following **Table 7**.

[1] This section includes some content adapted from: FAO and FHI 360. *Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO; 2016: Section 5: 33-35.*

For the purposes of this section, we assume trainer(s) are already trained in the method. **Table 7** includes the possibility of multiple trainers/training rooms. To ensure consistency, a single trainer and single group of trainees is preferable, but if numbers are too large and multiple trainers are involved, they should all have completed the same training exercise (training of trainers).

Depending on the background and training of the survey training staff, it may be helpful to provide additional backup by inviting an experienced nutrition expert to present the recall rationale and/or methods. For some topics, the exact content of training will differ depending on whether the survey planners have selected the open or list-based recall method, as described in the following sections.

Table 7. Materials and supplies for training on liquid and food group recalls[a]

Material	Quantity	Comments
Slide deck covering training topics	One set per training room	Recommend including blank questionnaire forms in the slide deck, particularly if trainees do not have tablets. Forms should be "blown up" and divided between slides as needed for good visibility.
Set of adapted questionnaires	One set per person (both trainers and trainees)	This set can be in paper form or uploaded onto tablets.
Training manual and interviewer instructions	One set per person	Training manual and interviewer instructions should follow survey-specific conventions for format and level of detail. Concepts presented in this document can be presented in the trainees' own language.
An extended list of food items corresponding to each row in the questionnaire	One set per person	The list should include the most common items (those listed in the questionnaire) but also less common items that may be reported by respondents. There should also be a list of items not included in any food group (see **Annex 6)**. These lists should be developed during questionnaire adaptation and may draw on Annex 6.
Signs for each food group (questionnaire row) to label "stations" for the interactive training exercise	One set per training room	Signs should be large enough for text to be visible from across the training area or room. Signs should include the question number from the questionnaire (e.g. "**7A**") and the words in that row.
Item cards for interactive training exercises depicting foods	One set per trainee	Food items on the cards can be indicated via text but are best displayed as line drawings or photos. The number of item cards will depend on how much time is available for the interactive exercises. Try to include less common foods from the extended lists and not only those named in the questionnaire.
Examples for role-playing	Several per trainee	Make up 3–4 examples listing all the foods and beverages consumed by an "imaginary" IYC in one approximately 24-hour recall period; have examples for different ages (e.g. an 8-month, 12-month and 22-month old infant). Try to include less common foods from the extended lists and not only those named in the questionnaire as well as mixed dishes that will require further probing to ascertain the main ingredients correctly.

[a] This list does not include all items needed for training sessions such as pens/pencils, pads of paper, water and food, chairs and tables, audiovisual equipment, data collection devices, etc.

E.2.1. INTRODUCING THE QUESTIONNAIRE (BOTH METHODS)

- Explain that the general objective of the questionnaire is to learn about breastfeeding practices in the first two days after birth and also about all the drinks and foods consumed by the IYC during the previous day and night.
- Explain that we ask these questions for three reasons:
  - First, infants under six months of age should be exclusively breastfed, i.e. receiving breast milk only and no other liquids or foods, not even water. We are therefore interested to know if they are consuming other drinks and foods.
  - Second, we are interested in the diversity of IYC diets. Explain that healthy IYC diets should vary and include many nutrient-rich foods and food groups including fruits, vegetables, legumes and nuts, as well as animal foods such as meat, dairy products, eggs and fish.
  - Third, we are interested in whether IYC are consuming drinks and foods which may be less healthy. When IYC consume sweet foods or drinks, or fried and salty foods and snacks, they may lose their appetite for other more nutritious foods; they may also consume too much sugar or salt.
- Present the questionnaire and explain that it asks about breastfeeding in the first two days after birth before going on to inquire about feeding practices on the day before the interview. Explain that you will go over some general concepts related to breastfeeding, the food list and other feeding questions.
- Explanation of some breastfeeding concepts (**Q1–5**):
  - Present the first five questions on breastfeeding and bottle-feeding. Explain that these questions are about feeding in the first few days after birth and about feeding on the day before the interview.
  - Explain that for most babies, breastfeeding occurs when the baby suckles at the mother's breast. This will be immediately understandable for the respondent: there is no need to probe specifically for other ways in which the baby may have received breast milk. However, if the respondent mentions that the baby drank milk that had previously been expressed by the mother or received milk from another woman, this still counts as breastfeeding.
  - For Question 2, explain that "being put to the breast" means that the baby was given the opportunity to feed at the mother's breast. It is not necessary that the baby actually suckled on the breast or successfully obtained milk or colostrum from the breast. It is also not necessary that the newborn be placed on the nipple. Translations into different languages should be careful to use a term that does not have other connotations (e.g. in some languages there are terms which denote chest or breast interchangeably and may thus be interpreted by respondents in different ways, while other terms refer only to the breast in the context of this question, and are therefore preferable).
  - After addressing any queries the interviewers have, introduce the questions on liquid and food group recalls.

Overview of the food and liquids list (**Q6–7**):

- Explain that the general objective of these questions is to learn about all the drinks and foods consumed by the IYC in the previous day and night.
- Present the list and indicate that it organizes drinks and foods into groups of similar items.
- Make it clear that for some drinks including yogurt, there are follow-up questions on the number of times the IYC drank or ate. Explain that these foods are especially important for non-breastfed IYC because they provide some of the nutrients found in breast milk.
- Indicate that for some drinks there are follow-up questions on whether the drink was sweet or had been flavoured or sweetened. Discuss what is meant by sweet, "flavoured" and "sweetened":
  - Explain that drinks are considered to be sweetened if sugar, honey, other sweeteners, sweet drink powders or syrups are added in the home, or when such sweeteners are an ingredient in packaged or prepared drinks purchased outside the home.
  - Explain that "flavoured" refers to drinks with chocolate, vanilla, strawberry, banana, caramel or any other kind of flavour.
  - Explain that there are many types of sugars and sweeteners and flavourings, and it will not be necessary to distinguish them during the interview. However, they should be aware that drinks with any type of sugar or sweetener[1] (e.g. honey, syrup or fructose) or any type of flavouring (e.g. chocolate, vanilla or banana) will be considered sweet/sweetened for the purpose of this indicator.
- Point out that some respondents, especially when the open recall version of the questionnaire is used, are likely to mention a mixed dish like fried rice, salad or omelette. In such cases, the interviewer should probe to get information about the main ingredients in the mixed dish, usually the top two or three ingredients by amount.
- Spell out that the purpose of the questionnaire is solely to obtain information about foods consumed and not quantities: no attempt should be made to estimate ingredient proportions or quantities during the survey interview since this is a very difficult task which requires more training practice and different tools. It cannot be done reliably in simple non-quantitative food group recalls.

Overview of the question on number of times fed the previous day (**Q8**):

- Explain that this question intends to capture information on the frequency of feeding solid, semi-solid or soft foods, i.e. individual feeding episodes (meals or snacks) that contained non-liquid food.
- Point out that interviewers should ask the caregiver the question exactly as it is written. In many instances, the respondent will automatically indicate the number of times: this can be recorded directly in the questionnaire.
- Confirm that there may be occasions when the respondent needs clarification, which may include explaining that:
  - only meals where solid or soft foods were eaten count and that meals where *only* liquids or watery foods (e.g. very thin, watery soups or gruels) were consumed do not count;

[1] There is no need to attempt to distinguish non-caloric, low-calorie or artificial sweeteners from natural sweeteners: this distinction is not feasible with the methods recommended in this guidance.

- both meals and snacks count;
- very trivial snacks should not be counted as meals or snacks, e.g. a bite of a banana or one spoonful of yogurt is not to be considered a feeding episode (meal or snack).

- Allow time for queries, clarification and discussion.

E.2.2. DESCRIPTION OF QUESTIONNAIRE ROWS AND EXERCISE IN CLASSIFYING FOODS

- Read through the questionnaire rows on the adapted questionnaire. Describe what "belongs" in each row. **Annex 5** and **Annex 6** provide detailed descriptions and lists of items in the groups, and can be adapted for training.
- Clarify any queries about why items are placed in specific rows. The rows for vitamin A-rich fruits and vegetables, sentinel sweet foods and sentinel fried and salty foods may need special attention.
- Good trainees may notice that the lists of example foods in the questions do not include all possible items. If asked, explain that this is correct, and that the items listed and requested during the interview are those most commonly consumed by IYC in the survey area as decided with local experts during questionnaire adaptation. They should also be made aware that the extended lists (**Table 7**) provided to them as training aids contain less common items which may be reported by respondents. They should be familiar with these items so they can readily categorize them among the wide variety of foods respondents are likely to mention during field work. If they know of other common items that are missing, consult with the survey manager and local experts to see whether they should be added to the extended lists.
- Trainees may also notice other foods that are absent from the questionnaire. These are generally condiments, which are used to add flavour. Discuss this group of items and clarify that they should not be "counted" in any food group but can be noted in row 7R for "Other foods". See **Annex 6** for a list of such items.
- Go over the concept of mixed dishes in the questionnaire approach used in your survey. With the list-based approach, the respondent should be asked to think of foods the IYC may have consumed in a mixed dish before the list of food groups is read. With the open recall approach, the interviewer should probe for the main ingredients in the mixed dish, usually the top two or three ingredients by amount, and enter each of the items mentioned by the respondent into the appropriate line items from 7A–7R. Households will vary in terms of which ingredients are recorded as being consumed in a mixed dish. Here are some example scenarios:
  - Some mixed dishes like fried rice can vary widely in terms of their main ingredients. For example, when probed during an open recall for the main ingredients of fried rice consumed by the IYC, the respondent in one household might state rice, garlic, soy sauce and oil, in which case only the grain food group (7B) should be recorded as "yes". In a different household the respondent might indicate that the main ingredients were rice, eggs and garlic, in which case the grain food group (7B) and the egg food group (7L) should be recorded as "yes". In yet another household, the respondent may specify that the main ingredients were rice, eggs, chicken, carrots, onions and green peppers; in this instance, the respondent should be asked to state the top three ingredients in terms of quantity: these three should then be recorded as "yes".

- Some mixed dishes like tabbouleh tend to have a more standard set of ingredients and may vary less between households. However, when open recall is used, the interviewer should not assume this to be the case and should ask the respondent to specify the main ingredients. In many households, the respondent will indicate bulgur, parsley, tomato, cucumber and lemon as the main ingredients, in which case grains (7B), dark green leafy vegetables (7E) and other vegetables (7F) should be recorded as "yes" but not "Other fruits" since only a small amount of lemon juice is present compared to the other ingredients.
- While these examples apply to the open recall questionnaire, respondents may also ask the interviewer using the list-based questionnaire how they should reply when asked about the mixed dish their child ate on the previous day. If so, the interviewer can remind them that they should not answer "yes" for any food or ingredient used in a small amount to add flavour to a dish and also suggest that they only answer "yes" for the top three ingredients in the mixed dish. Where they mention a specific mixed dish and name more than three ingredients, the same approach as described for the examples of fried rice and tabbouleh in the open recall examples above can be adopted.

- Explain about multi-ingredient foods that are considered as single items, using examples from the adapted questionnaire (e.g. bread which should only be marked as a "yes" in row 7B of the questionnaire, fried chicken in row 7K, stir-fried spinach in row 7E or French fries in row 7Q, if any of these are common in the survey area).
- In an interactive exercise (see **Box 5**), have interviewer trainees classify foods into the appropriate rows of the adapted questionnaire using a stack of food item cards. This training exercise is useful for both recall methods (list-based or open) although more important for the open recall method.

Box 5. Example of an interactive exercise for sorting items into food groups

- Give each trainee a set of 15–25 item cards to classify. Use a smaller number if time is very limited and a larger number if time allows. Each trainee should get the same set of images.
- "Items" are foods or ingredients that are commonly consumed in the survey area(s). Item cards could have the item name in text although it is preferable to have line drawings or photos of the items. Drawings or photos can include various forms such as raw/cooked, peeled/unpeeled, whole/chopped/sliced, etc. (In other words, there can be more than one form of the food on the same card.)
- If time allows, the exercise can be done in two stages, starting with a set of 10–15 items that are easy to classify, followed by a discussion, and then completed with a set of more difficult 10–15 items. If time allows, repeat exercises as needed if the group is having difficulties.
- Include items that are easy and others that may be difficult to classify. Include multi-ingredient items that are classified as "single foods" such as bread, fried chicken, French fries or fruit pies. If only one round is possible, it is important to include a number of more challenging items.
- Have "stations" around the training room labelled for each of the rows on the food group recall. Ask trainees first to sort their cards into groups, then take their cards and place each card at the station where they think the item belongs.
- For each exercise, retrieve the stacks from the stations and discuss before proceeding to the next exercise.

- During discussion, ask trainees which foods were difficult to classify, and why. Present and discuss food items that were classified into different (correct and incorrect) groups by the trainees. Continue the discussion until all trainees understand the correct classification(s) and have no more queries.
- If time allows and trainees come from different geographic regions, ask them all to list three commonly consumed food items in their geographic region (i.e. new items not on the training cards), write them on pieces of paper and place them into the correct food group category. Follow with discussion, as above.

E.2.3. INTRODUCING THE RECALL METHOD AND RECORDING INFORMATION

- Remind trainees that the objective is to learn about all drinks and foods consumed by the IYC during the day and night whether at mealtimes or between meals (e.g. snacks). Remind them this applies to both foods consumed at home and anywhere else outside the home.
- Emphasize that we are interested in what the IYC actually consumed, not what they were offered and may have refused to eat.
- Explain that they will be asking **what** the child drank and ate, but **not** how much.
- Clarify the time period of the recall: from the time the IYC awoke the previous day through to the morning of the interview day. Explain that the aim is to gather information about an entire 24-hour period: this means that if the IYC woke in the night and was given food or drink, this should be included. The trainer may need to provide more guidance depending on what in the context signifies an approximately 24 hour period, e.g. in some settings the time the child "wakes for the day" can be defined as any time the child wakes after the mother has already gotten up for the day.
- Set out the selected recall method for foods (see **Box 6**); for open recalls, explain how to do the "second pass".
- Explain that for drinks, the questionnaire uses a list-based approach, meaning that interviewers will read out a list of different types of drinks, and the respondent will answer "yes", "no" or "don't know". For some drinks there are follow-up questions. Explain that the list-based approach helps ensure that the right follow-up questions are asked for different drinks.
- Review the concept of mixed dishes and ask if there are further queries.
- For trainees using the list-based approach, mention that even though respondents are meant to answer "yes" or "no" for items as written, they may volunteer information about mixed dishes, hence the importance of understanding this issue.
- For trainees using open recall, discuss how to probe about mixed dishes during the recall, and where to place ingredients in the questionnaire rows.
- Re-emphasize that some foods are classified in only one row even if they have several ingredients (e.g. bread goes in 7B even if it contains ingredients other than grains).
- For foods classified as sentinel unhealthy foods, other ingredients are not counted in their respective food groups and therefore do not need to be asked about (e.g. cake goes in 7P for sentinel sweet unhealthy foods even though it may contain grains, eggs, fruit and other ingredients).

- Remind the trainees that there are some items that do not belong in any of the food group categories:
  - trainees may be aware that some items while very nutritious (for example, bean pastes, fish powder, garlic and herbs) are not in the food lists for any item in 7A–7Q. If the issue arises, explain that it is true these foods are nutritious, but the amounts of such items usually consumed by IYC in mixed dishes are too small to provide much nutrition: they are therefore too insignificant to "count" and thus do not have an associated line in the questionnaire, although they can be recorded under 7R.
- Give an account of and demonstrate a recall using the selected method, including the "second pass" if you are training interviewers to use the open recall method. Show interviewers how to record information in the questionnaire when using a printed questionnaire or tablet.

Box 6. Explaining the selected recall method

Open recall method - first pass

- Ask the trainees to look at the questionnaire form for recording the open recall of foods. Explain that they will ask a series of standard probing questions to help respondent(s) recall all foods consumed by the IYC during the previous day and night. The recall begins with the time the IYC woke the previous morning, with probing questions to guide the respondent to think about each hour of the day and night. Read out an example probing question. Trainees should also probe for main ingredients in mixed dishes.
- The recall is called "open" because the respondent can state in her own words what the child ate during different times of the day, instead of answering "yes" or "no" to lists of foods, as she did for drinks.

Open recall method - second pass

- After information from the first pass has been marked "yes" for food groups mentioned by the respondent during the open recall (whether on paper or a device), explain that during the "second pass" the interviewer will use a list-based approach to ask directly about each food group not mentioned by the respondent, i.e. food groups not marked "yes" in the period after the respondent said the child woke up on the interview day.
- The respondent may interrupt and insist that she already told everything. Ask her to be patient and try to read through the remaining food groups quickly.

List-based recall method

- Ask the trainees to look at the questionnaire form for recording the list-based recall of foods. Explain that they will read out the text which introduces this set of questions as well as each questionnaire row (food group) exactly as written, and that the respondent should answer "yes", "no" or "don't know" to indicate whether or not the IYC consumed any item for that row.
- The recall is called "list-based" because lists of example foods are pre-defined.
- However, at times a respondent may begin talking about other foods the IYC consumed. If so:
  - when permitted by the survey protocol, note them down on paper as she says them, and as soon as possible after the interview, mark the correct row (food group) on the paper questionnaire or tablet;
  - when working on a tablet without a note-taking function, scroll back and forth among food groups to tick the correct food groups for each item the respondent mentions.

E.2.4. CLASSROOM PRACTICE WHEN REHEARSING THE RECALL

- Have the trainer(s) do a recall in front of the group, demonstrating both correct and incorrect methods.

  For example, incorrect methods could include asking probing questions that are actually "leading questions" in the open recall (e.g. "did you put meat in the stew?") or skipping food groups on the list-based recall. Another common incorrect method in the list-based approach is to continue reading the list of examples for a particular food group after the respondent has already said "yes".

- Using the examples provided for an "imaginary" IYC (see **Table 6**), have trainees practise or role-play in pairs, and get them to complete questionnaires during the exercise. The trainer(s) should circulate in the room observing and noting good practices and errors to highlight in the subsequent discussion.
- Review the questionnaires marked during the role plays, correcting errors as necessary. The trainer can read out the correct food groups/questionnaire rows that ought to have been marked for each "imaginary" IYC and invite queries from trainees who marked different rows or omitted to mark rows.
- Select several pairs of trainees to practice in front of the group, making up their own examples for an "imaginary" IYC. Ask other trainees to comment on the role play; follow with corrections as needed.
- Discuss anticipated challenges the interviewers may face while conducting the interview in the field.
- Throughout training, allow sufficient time for queries and comments from interviewer trainees: these may indicate that there is a need to modify parts of the interviewer instructions or job aids to improve ease of administration and clarity for the respondent.

E.2.5. FIELD PRACTICE

- Follow standard practices established by the survey organizers for field practice by trainees; standard practice will vary depending on the type and scale of the survey in which the IYCF questionnaire is embedded.
- If feasible, incorporate at least two field practice sessions, with time for debriefing between sessions.
- When the open recall is used, it is ideal (although not always feasible) to schedule up to two classroom days on the IYCF module into the overall interviewer training schedule. If the interviewers are nutritionists or have experience with nutrition questionnaires, initial classroom training can be somewhat shorter. Classroom training for the IYCF module with a list-based recall can usually be accomplished in one day.
- In all cases, interviewers can continue to learn during survey implementation through direct feedback from supervisors, debriefing and group discussions during field staff meetings and, in the event of extended data collection, through periodic retraining.

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ANNEXES

ANNEX 1: PARTICIPANTS IN THE 2018 TECHNICAL CONSULTATION

Inter-Agency Technical Consultation on Infant and Young Child Feeding Indicators
11–13 July 2018, Geneva, Switzerland.

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ANNEX 2: PARTICIPANTS IN THE 2017 TECHNICAL CONSULTATION

Reconsidering, Refining, and Extending the World Health Organization Infant and Young Child Feeding Indicators, 20–22, 2017, New York, United States of America.

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ANNEX 3: SAMPLING AND DESIGN ISSUES SPECIFIC TO FOOD GROUP RECALL SURVEYS[1]

There are a few issues specific to the measurement of food group diversity, including sampling on days of the week and "unusual" days (e.g. feasts). In addition, seasonality should be considered. Concern with seasonality is not unique to data collection for food group diversity; seasonality is an issue for indicators in many sectors including food security, health, nutrition, labour and education.

Sampling on 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 a regular feature of their overall diet and part of the picture of diet quality at the population level. If days of the week are represented with equal frequency in the data set, eating patterns will also be correctly represented. If it is not possible to collect data on all days of the week owing for example to legal or cultural reasons associated with not working on the Sabbath, it is still important that data are collected on the other six days of the week. Any biases in known eating patterns on days that could not be included should be noted.

Sampling on "unusual" days

In general, there is no need to avoid feast days, weddings or other celebrations as the recall day for the respondent for the same reason noted above in relation to sampling on days of the week. It is not important if some individuals in the sample have consumed more than usual, for any reason, on the recall day: this is part of a normal variation in intake.

Ramadan presents a specific problem because of its length and because eating patterns may differ among many or all members of the community compared to the entire rest of the year. Other than for rolling or entire-year surveys, it is better to avoid fielding food group diversity surveys during Ramadan. If they are necessary during Ramadan, this factor should be considered when interpreting results.

Although intakes may be higher and more varied on some days of the week and/or at celebrations, their quantity and variety may be lower than usual when people are ill. However, there is no need to avoid sampling or using data from recall days when respondents report low appetite or illness. These events are also part of a normal variation in intakes within a population on any given day.

Some dietary surveys include a short set of questions: 1) was the intake usual or not? If not, 2) was it more or less than usual? 3) Why was the intake unusual (e.g. due to illness, fasting, celebration/feast or other reason)? Responses to these questions can be analysed when checking data quality. For example, if zero food groups are reported for a 22-month-old child, this is more plausible if the child was reported to eat less on the recall day due to illness. If all eight food groups are reported for the child, this may be more plausible if the family attended a wedding or feast on the recall day.

[1] Lightly adapted from: FAO and FHI 360. Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO; 2016: Appendix 1: 45-46.

In summary, unusual intakes at the individual level are not a problem and should not be treated differently during data collection or analysis. However, if there is reason to believe the food intake of a large segment of the survey sample is highly unusual, it is better to avoid surveying at that time.

Seasonality

Diet patterns in many contexts vary with season. For example, the mango season may strongly affect the proportion of IYC reported to consume vitamin A-rich fruits and may thus affect the proportion reaching the threshold of five or more food groups. Other seasonal foods may have less impact: in some settings the type of green leafy vegetable varies with the season, but one type or another is consumed all year-round.

It is also possible for food group diversity to increase during lean/hunger seasons, when foraged foods may be consumed. These foods can add diversity and even micronutrients, but in an overall context of inadequate caloric intake. In such a situation, increased food group diversity should not be viewed in isolation.

Survey designers should consider seasonality when fielding and interpreting results from food group recall surveys. In particular, repeated surveys should be conducted during the same season if seasonality is likely to affect diversity in the local context. Similarly, care should be taken when making comparisons across different geographic areas if data were collected during different seasons: results from the hunger season in one zone may not be comparable to results in the post-harvest season in another, even if they were collected in the same month.

ANNEX 4: RESOURCES ON SURVEY METHODOLOGY

This Annex provides links to resources covering a variety of survey topics.

Most links below are to resources developed by the two major survey programs that have collected most of the national-scale data on IYCF practices to date: the Multiple Indicator Cluster Surveys (MICS) and the Demographic and Health Surveys (DHS) program. All links were accessed 31 August 2020.

MICS tools are available for all survey rounds, of which the most recent is MICS6. Links provided in the resource list will always be to the most recent round of MICS (i.e. links on publication in 2020 are to MICS6 but in the future they will automatically redirect to MICS7, MICS8, etc.). DHS documentation is also available for multiple survey rounds, of which the most recent is DHS7.

These MICS and DHS tools are described in more detail in the 2019 WHO/UNICEF document "Recommendations for data collection, analysis and reporting on anthropometric indicators in children under 5 years old". https://data.unicef.org/resources/data-collection-analysis-reporting-on-anthropometric-indicators-in-children-under-5/. Chapter 1 of this document provides detailed guidance on survey planning and sampling, with links to the same and other tools.

MICS AND DHS QUESTIONNAIRES

MICS6 questionnaires: http://mics.unicef.org/tools#survey-design

DHS8 questionnaires: https://dhsprogram.com/publications/publication-DHSQ8-DHS-Questionnaires-and-Manuals.cfm

SURVEY AND SAMPLE DESIGN

- The latest MICS Survey Design Tools, Survey Design, available at: http://mics.unicef.org/tools#survey-design
- **Guide to DHS Statistics**, available at: https://dhsprogram.com/publications/publication-dhsg1-dhs-questionnaires-and-manuals.cfm

  The Guide is also available as an online reference at: https://www.dhsprogram.com/Data/Guide-to-DHS-Statistics/index.cfm
- **DHS Sampling and Household Listing Manual**, available at: https://dhsprogram.com/publications/publication-dhsm4-dhs-questionnaires-and-manuals.cfm

DETERMINATION OF SAMPLE SIZE

- The latest MICS Survey Design Tools, Sampling: **MICS Sample Size Calculation Template**, available at: http://mics.unicef.org/tools#survey-design
- **DHS Sampling and Household Listing Manual**, available at: https://dhsprogram.com/publications/publication-dhsm4-dhs-questionnaires-and-manuals.cfm

IMPLEMENTATION OF SAMPLING/METHODS FOR SELECTING RESPONDENTS

- WHO/UNICEF. **Recommendations for data collection, analysis and reporting on anthropometric indicators in children under 5 years old**. Geneva; WHO: 2019. Sections 1.2 and 2.1, available at: https://data.unicef.org/resources/data-collection-analysis-reporting-on-anthropometric-indicators-in-children-under-5/
- The latest MICS Survey Design Tools, Sampling: **MICS Systematic Random Selection of Households Template**, available at: http://mics.unicef.org/tools#survey-design
- The latest MICS Survey Design Tools, Sampling: **MICS Manual for Mapping and Household Listing,** available at: http://mics.unicef.org/tools#survey-design
- The latest MICS Data Collection Tools, Conducting Fieldwork: **MICS Instructions for Supervisors**, available at: http://mics.unicef.org/tools#data-collection
- The latest MICS Data Collection Tools, Conducting Fieldwork: **MICS Instructions for Interviewers**, available at: http://mics.unicef.org/tools#data-collection
- **DHS Sampling and Household Listing Manual**, available at: https://dhsprogram.com/publications/publication-dhsm4-dhs-questionnaires-and-manuals.cfm
- **Demographic and Health Surveys Supervisor's and Editor's Manual**, Section on Preparing for Fieldwork, available at: https://dhsprogram.com/publications/publication-dhsm2-dhs-questionnaires-and-manuals.cfm
- **Demographic and Health Surveys Interviewer's Manual**, Section on Fieldwork Procedures, available at: https://dhsprogram.com/publications/publication-dhsm1-dhs-questionnaires-and-manuals.cfm

METHODS FOR DETERMINING OR ESTIMATING AGE

- IFAD/FAO. **Guidelines for estimating month and year of birth in young children.** Rome: FAO; 2008. http://www.fao.org/3/aj984e/aj984e00.htm
- WHO/UNICEF. **Recommendations for data collection, analysis and reporting on anthropometric indicators in children under 5 years old**. Geneva; WHO: 2019. Sections 1.3, 1.4 and 2.2, available at: https://data.unicef.org/resources/data-collection-analysis-reporting-on-anthropometric-indicators-in-children-under-5/
- The latest MICS Data Collection Tools, Conducting Fieldwork: **MICS Instructions for Interviewers**, available at: http://mics.unicef.org/tools#data-collection
- **Demographic and Health Surveys Interviewer's Manual.** Washington; USAID; 2019. Section on Women's Questionnaire, available at: https://dhsprogram.com/publications/publication-dhsm1-dhs-questionnaires-and-manuals.cfm

METHODS FOR ADAPTING FOOD GROUP RECALL SURVEYS

- The latest MICS Survey Design Tools, Questionnaires and Indicator List, **Guidelines for the Customization of MICS Questionnaires**, available at: http://mics.unicef.org/tools#survey-design

  See pages 36–47 and Appendix B for Terms of Reference for experts to assist with customization. Note, however, that customization specifics need to be updated in order for them to be compatible with the new Model Questionnaire in this document.

- **Cross-Cultural Survey Guidelines**, chapter on Adaptation, available at: https://ccsg.isr.umich.edu/index.php/chapters/adaptation-chapter

TRANSLATION

- **Cross-Cultural Survey Guidelines**, chapter on Translation, available at:

  https://ccsg.isr.umich.edu/index.php/chapters/translation-chapter/translation-overview

- **Survey Organization Manual for Demographic and Health Surveys.** Washington; USAID: 2012: 18, available at: https://dhsprogram.com/publications/publication-dhsm10-dhs-questionnaires-and-manuals.cfm

TRAINING PROTOCOLS

- The latest MICS Survey Design Tools, Preparing for Fieldwork: **Main Fieldwork Training – Recommendations and Template Agenda.** New York; UNICEF: 2017; available at: http://mics.unicef.org/tools#survey-design

- DHS will be updating their training manual to reflect the transition to CAPI and other changes.

ANNEX 5: UNDERSTANDING AND ADAPTING LIQUID GROUPS

Table A5.1 below provides further description of each of the liquid groups in Question 6 of the example questionnaire. In addition, the table indicates which liquid groups require follow-up questions:

- If the IYC drinks formula, animal milk, yogurt drinks or eats semi-solid yogurt, these are considered milk feeds. An additional follow-up question should be asked about the number of times they were consumed during the previous day, as the number of milk feeds is a component in several indicators for non-breastfed IYC (MMF, MMFF and MAD).
- For some liquid groups (milk, yogurt drinks, coffee, tea, herbal drinks and "other" drinks), it is necessary to know whether or not the drink was sweetened or flavoured. A follow-up question is therefore needed for some groups.

In the example questionnaire and below, there is no follow-up question for fruit juice and fruit-flavoured drinks. This is because even 100% juice may be associated with higher IYC weight-for-length *(38)*, but also because it is often impossible to distinguish between 100% fruit juice and sugar-sweetened fruit-flavoured drinks in surveys using the methods described in this guidance document. When caregivers purchase premade juice drinks in shops or informal markets, they may not know whether the product contains added sugar.

Similarly, it is often impossible for survey respondents to distinguish between drinks sweetened with caloric vs. non-caloric sweeteners. For the purposes of the indicator, beverages sweetened with non-caloric sweeteners are also included because it is not feasible to distinguish them.

ADDING ROWS (GROUPS) TO THE QUESTIONNAIRE

Question 6J asks about any other liquids. This question is necessary because if the IYC has received any liquid other than breast milk, she or he is not considered to be exclusively breastfed. The purpose of this "Any other liquid" group is to capture less common fluids that may be given to only a few infants.

If any of the examples in this row in the table below (water with added sugar, vegetable juices, coconut water, soy milk, nut milk) or any other fluid is commonly[1] given to IYC, survey planners may choose to add a row to the questionnaire to ensure that the information is not missed. If this is the case, the calculation for exclusive breastfeeding should be changed accordingly.

If a row "soy and/or nut milk" is added, a follow-up question should be inserted asking whether they were sweetened, because this is common. If this is the case, the indicator calculation for sweet drinks should be changed accordingly.

[1] If previous survey data on IYC intakes of various fluids are available, fluids can be considered as "commonly" given if ≥ 5% of infants <6 months old consumed the fluid.

ADAPTING THE WORDING IN THE QUESTIONNAIRE ROWS

The exact list of liquids in each row should be adapted as necessary based on common beverages in the survey area. For example:

- Question 6D asks about "yogurt drinks" but the group description includes kefir, buttermilk and any other fermented dairy beverage. The question should be adapted to list those commonly given to IYC in the survey area (e.g. "Yogurt drinks or kefir?").
- Question 6H asks about tea, coffee and herbal drinks. In some places, coffee would never (or very rarely) be given to IYC, so it could be dropped from the question. In some places herbal drinks would be described differently and possibly as medicines or tonics. The wording of the question should be adapted accordingly.

Table A5.1. Liquid groups in the example questionnaire

			Follow-up question in questionnaire	
Q#	**Group**	**Description of group**	**Count question for milk feeds**	**Was drink sweet, flavoured or sweetened?**
6A	Plain water?	Plain water, boiled or not boiled, but **not** water with sugar or anything else added.		
6B	Infant formula, such as ***[insert local names of common formula]***?	Any type of commercially-produced infant formula including soy formula, predigested/hydrolysed formula and "follow-up" formula (growing-up milk, toddler milk), but not homemade mixtures.	X	
6C	Milk from animals such as fresh, tinned or powdered milk?	Any type of milk from any mammal (e.g. cow, goat, sheep, buffalo, camel) which is given to the child as a liquid (drink). This includes liquid milk whether raw or pasteurized, reconstituted powdered milk, or evapourated milk (tinned). Flavoured milks, milkshakes or other animal milk-based shakes and smoothies are also included. Dairy cream (e.g. half and half, whipping cream,) does not count under this line item. Sweetened condensed milk (usually sold in a tin) and all types of non-dairy creamers whether liquid or powdered also do not count in this line item and if commonly fed to IYC in the country, care should be taken during questionnaire adaptation and interviewer training.	X	X
6D	Yogurt drinks such as ***[insert local names of common types of yogurt drinks]***?	Any type of animal milk-based yogurt drink or drinkable fermented milks such as buttermilk or kefir, whether fresh or packaged. Does not include yogurt that is eaten with a spoon rather than drunk (semi-solid yogurt is in the foods list, Q8A).	X	X

Q#	Group	Description of group	Follow-up question in questionnaire	
			Count question for milk feeds	Was drink sweet, flavoured or sweetened?
6F	Fruit juice or fruit-flavoured drinks, including those made from syrups or powders?	Any type of fruit juice, fruit drink, fruit-flavoured drink, fruit "squash" or fruit "smoothie". All are assumed to be sweet drinks, so there is no follow-up question.		Assumed
6G	Sodas, malt drinks, sports drinks or energy drinks?	Any of the types listed. "Sodas" means sweetened carbonated beverages. All these types of drinks are assumed to have sugar/sweeteners as an ingredient, so there is no follow-up question.		Assumed
6H	Tea, coffee, or herbal drinks?	Any kind of tea, coffee, herbal drink or infusion, including those given as traditional medicine.		X
6I	Clear broth or clear soup?	Any clear broth or soup (water-based broth or soup, liquid only), whether homemade or purchased. Examples include strained broths and broths made from reconstituted bouillon cubes.		
6J	Any other liquids?	Any other liquid of any type drunk by the IYC yesterday. Examples include water with added sugar, vegetable juices, coconut water, soy milk and nut milk.		X

ANNEX 6: UNDERSTANDING AND ADAPTING FOOD GROUPS[1]

This Annex provides extensive lists of examples for each of the rows in Question 7 about food groups in Section B of Part 2 of this manual. While the examples are extensive, they are not exhaustive, and in particular many locally specific wild and foraged foods are not represented.

For certain foods, botanical and culinary classifications into groups can differ. Throughout, we follow common culinary classifications. For example, tomatoes, though botanically a fruit, are classified with other vegetables. Plantains, though botanically a fruit, are classified with white/pale starchy staples (roots and tubers). Examples are provided for rows 7A–7Q in the model questionnaire.

Table A6.1. **Food groups and corresponding question numbers**

Question #	Group
7A	Yogurt, other than yogurt drinks
7B	Foods made from grains
7C	Vitamin A-rich deep yellow- and orange-fleshed vegetables
7D	White/pale starchy roots, tubers and plantains
7E	Dark green leafy vegetables
7F	Other vegetables
7G	Vitamin A-rich fruits
7H	Other fruits
7I	Organ meat
7J	Processed meat
7K	Other meat and poultry
7L	Eggs
7M	Fish and shellfish
7N	Beans, peas, lentils, nuts or seeds
7O	Cheese
7P	Sentinel sweet foods
7Q	Sentinel fried and salty foods

Following the examples for each of the food groups, **Table A6.19** provides guidance on some example items that present classification challenges.

[1] This section is adapted from: FAO and FHI 360: *Minimum Dietary Diversity for Women: A Guide for Measurement.* Rome: FAO; 2016, Appendix 2: 47-65; and WHO: *Indicators for assessing infant and young child feeding practices Part 2: Measurement.* Geneva: WHO; 2010, Annex 4: 64-77.

YOGURT, OTHER THAN YOGURT DRINKS

Yogurt is not usually considered to be a food group separate from other dairy foods. However, because yogurt is counted as a milk feed for the minimum milk feeding indicator (while cheese, for example, is not) yogurt must be separated from other dairy foods in the questionnaire. This group includes any form of animal milk-based yogurt, when eaten rather than drunk (i.e. not yogurt drinks). Yogurt drinks and drinkable fermented milks are asked earlier, in the liquids list. The reason for asking separately about yogurt drinks and yogurt eaten as a food is that there is a follow-up question about sweetness on the liquids list, and sweet yogurt drinks are included in the indicator calculation for sweet beverages.

FOODS MADE FROM GRAINS

This group includes products and foods derived from cereal crops.

Include any staple dishes or products such as breads (e.g. bagels, rolls, chapatti, roti, lavash, tortillas), porridge (ugali, nsima/nshima, posho, sadza, mealies, dalia, muesli, papilla, grain fufu), rice (all kinds) and noodles (pasta, soba, spaghetti, vermicelli) made from the grains listed below, and from flours of these.

Sweet biscuits, cakes, pies, sweet donuts and other grain-based confectionery are not included and are classified with "Sentinel sweet foods". Savoury doughnuts, instant noodles, and certain other fried and salty grain-based foods are classified with "Sentinel fried and salty foods"(see **Table A6.17** and **Table A6.18**).

Table A6.2. **Foods made from grains**

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

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
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
Wild rice	*Zizania*	Poaceae	Seed

VITAMIN A-RICH DEEP YELLOW- AND ORANGE-FLESHED VEGETABLES, ROOTS AND TUBERS

This group includes only roots, tubers and vegetables that are red, yellow or orange-fleshed and sources of vitamin A (see **Box A6.1**). This group includes several items that are botanically fruits but typically used as vegetables for culinary purposes. In most settings, this group will only include one or several of the foods listed here.

Table A6.3. **Vitamin A-rich yellow/orange-fleshed roots, tubers and vegetables**

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

Box A6.1. 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.

To determine the vitamin A content of a food per 100 g, consult a national food composition database for the survey area; if there is no available national database or if it does not include the food item consult food composition databases available from the Food and Agriculture Organization website at: http://www.fao.org/infoods/infoods/tables-and-databases/faoinfoods-databases/en/, or consult the United States Department of Agriculture "Food Data Central" database at: https://fdc.nal.usda.gov/, accessed 31 August 2020.

*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 the widest applicable age group for adult men and women (excluding pregnant and lactating women). For the definition of "source", see Codex Alimentarius Commission, Guideline CXG-23 adopted 1997, revised 2013. For the definition of NRV, see Codex Alimentarius Commission, Guideline CXG-2 adopted 1985, revised 2017 (for all Codex Standards, see http://www.codexalimentarius.org/), accessed 31 August 2020.

WHITE/PALE STARCHY ROOTS, TUBERS AND PLANTAINS

This group includes all white or pale-fleshed non-grain-based starchy staples, mainly providing carbohydrate. Where commonly consumed, purple-fleshed, and pink/red-fleshed starchy staples like purple-fleshed potatoes and pink-fleshed oca, should be included here. This group does not include non-starchy root vegetables like beets or radishes which are classified with "other vegetables".

Sweet cakes and other confectionery made with white roots, tubers or plantains or their products (e.g. tapioca) are not included and are classified with "Sentinel sweet foods". Savoury fried and salty foods such as potato chips, fried plantain chips and French Fries are not included and are classified with "Sentinel fried and salty foods" (see **Table A6.18**).

Table A6.4. White/pale-fleshed starchy roots and tubers

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*		Tuberous root
Arrowroot	*Maranta arundinacea*	Apiaceae	Rhizome
Bananas *(green/unripe)*	*Musa*		Starchy fruit
Breadfruit	*Artocarpus*	Marantaceae	Starchy fruit
Burdock root	*Arctium lappa*	Musaceae	Taproot
Canna lily *(achira)*	*Canna*		Starchy rhizome
Cassava *(yucca, manioc, mandioca)*	*Manihot esculentum*	Moraceae	Tuberous root
Chicory root	*Cichorium intybus*	Asteraceae	Tuberous root
Elephant foot yam *(white)*	*Amorhophallus paeoniifoleus*	Cannaceae	Starchy corm
Jicama/Yambean	*Pachyorhizuserosus*	Euphorbiaceae	Tuberous root
Lotus root	*Nelumbo nucifera*	Asteraceae	Spongy root

Common name ***(regional common names)***	***Binomial name OR genus***	**Family**	**Edible part of the plant**
Maca	*Lepidium meyenii*	Araceae	Tuberous root
Mashwa *(mashua)*	*Tropaeolum tuberosum*	Fabaceae	Stem tuber
Mauka	*Mirabilis longiflora*	Nelumbonaceae	Tuberous root
Nopal	*Opuntia*		Succulent stem
Oca	*Oxalis tuberosa*	Brassicaceae	Tuberous root
Parsnip	*Pastinacea sativa*	Tropaeolaceae	Tuberous root
Plantains *(ripe and green)*	*Musa*	Nyctaginaceae	Starchy fruit
Potatoes *(all skin colours (e.g. white, yellow, blue, purple, black) and all flesh colours* ***except*** *orange/deep yellow)*	*Solanum tubeosum*	Cactaceae	Stem tuber
Rutabaga	*Brassica napobrassica*	Oxalidaceae	Tuberous root
Sweet potato *(white/pale yellow- fleshed)*[a]	*Ipomoea batatas*	Apicaceae	Tuberous root
Tannia (yautia)	*Xanthosoma sagittifolium*	Musaceae	Starchy corm
Taro root *(cocoyam, dasheen, eddo, tannia, colocasia, arbi/ arvi)*	*Colocasia esculenta*	Solanaceae	Starchy corm
Turnip	*Brassica rapa*	Brassicaceae	Tuberous root
Ulloco *(melloco)*	*Ullucus tuberosus*	Convolvulaceae	Stem tuber
Water chestnut	*Eleocharis dulcis*	Araceae	Starchy corm
Yam	*Dioscorea*	Araceae	Tuberous root

[a] Note that orange and dark-yellow fleshed sweet potato are included in the previous group, "Vitamin A-rich deep yellow- and orange-fleshed vegetables, roots and tubers".

DARK GREEN LEAFY VEGETABLES

This group includes essentially all medium-to-dark green leafy vegetables (also broccoli), as all are vitamin A-rich (see **Box A6.1** 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 other 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.

Table A6.5. **Dark green vitamin A-rich leafy vegetables**

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
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

Common name ***(regional common names)***	***Binomial name OR genus***	**Family**	**Edible part of the plant**
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

OTHER VEGETABLES

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, avocado, cucumber, tomato and okra (all fruits in botanical terms) are included as "Other vegetables".

This group includes legumes when the immature, fresh or green pod is consumed (e.g. fresh peas, snow peas, snap peas or green beans). It does not include foods made with mature beans or peas (seed only) and it does not include dried beans, peas and lentils. Mature seeds of beans/peas and all dried pulses are classified in the group "Beans, peas, lentils, nuts or seeds".

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/pale starchy roots, tubers and plantains" group.

Commonly consumed vegetables vary widely with geography and can include foraged as well as cultivated foods. Fresh, frozen and canned vegetables are all included.

The following table provides a long list of examples, but other local vegetables can also be classified in this group.

Table A6.6. Other vegetables

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
Avocado	*Persea americana*	Lauraceae	Fruit
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
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

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Nakati *(mock tomato)*	*Solanum aethiopicum*	Solanaceae	Leaves
Okra	*Abelmoschus esculentus*	Malvaceae	Green fruit
Olives	*Olea europaea*	Oleaceae	Fruit
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	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: refer to the "Beans, peas, lentils, nuts or seeds" group 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 in the "Beans, peas, lentils, nuts or seeds" group.

VITAMIN A-RICH FRUITS

In addition to the examples in the table below, this group includes any other locally available fruits that are rich sources of vitamin A (see **Box A6.1**, for definition of "vitamin A-rich"). Vitamin A-rich fruits that are sweetened with sugar or canned/packaged in syrup are also included in this group. However, fruit pies and pastries and processed fruits such as "fruit leathers" are not included and are grouped with "Sentinel sweet foods" (see **Table A6.17**).

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 are usually used as vegetables and should be classified with "Other vegetables". If appropriate, these fruits should be listed as "ripe" in this row of the questionnaire and as "green" in the "Other vegetables" row. In these fruits are commonly consumed, interviewers should be carefully trained regarding this distinction.

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", to avoid inflating the proportion of IYC reported to consume vitamin A-rich foods.

Caution: some older questionnaires incorrectly classified fruits into this group based on red or orange colour. This is not correct. For example, oranges are **not** rich in vitamin A.

Table A6.7. Vitamin A-rich yellow/orange-fleshed fruits

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)*	*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

OTHER FRUITS

This group includes all fruits other than those classified as vitamin A-rich. However, it does **not** include items which are botanically fruits (e.g. cucumber, tomato, okra) but are used as vegetables in culinary systems.

Fruits that are sweetened with sugar or canned/packaged in syrup are also included in this group. However, fruit pies and pastries and processed fruits such as "fruit leathers" are not included and are grouped with "Sentinel sweet foods" (see **Table A6.17**).

Commonly consumed fruits vary widely with geography and can include foraged as well as cultivated foods. Fresh, frozen and canned fruits are all included. The following table provides a long list of examples, but other local fruits can also be classified in this group.

Table A6.8. Other fruits

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
Banana	*Musa indica*	Musaceae	Fruit
Baobab fruit *(monkey bread)*	*Adansonia*	Malvaceae	Fruit
Blackberry	*Rubus fruticosus*	Rosaceae	Fruit

Common name ***(regional common names)***	***Binomial name OR genus***	**Family**	**Edible part of the plant**
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
Mango, unripe *(green)*	*Mangifera indica*	Anacardiaceae	Fruit
Mulberry	*Morus nigra*	Moraceae	Fruit
Nectarine	*Prunus persica*	Rosaceae	Fruit
Orange	*Citrus sinesis*	Rutaceae	Fruit
Papaya, unripe (green)	*Carica papaya*	Caricaceae	Fruit

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
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
Sugar cane *(Saccharum officinarum)*	*Saccharum sinense, Saccharum barberi, etc.*	Poaceae	Stalk
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 (*Peruvian ground apple*)	*Smallanthus sonchifolius*	Asteraceae	Fruit

ORGAN MEAT

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

Table A6.9. Examples of organ meat

Common name
Blood sausage, other blood products
Gizzard
Heart
Kidney
Liver

PROCESSED MEAT

Processed meat is grouped separately from unprocessed meat for two reasons. First, the aim is to avoid having an overly long list of example items for meat, while still reflecting all types commonly fed to IYC. Second, some countries may wish to distinguish processed meats if they provide guidance that these items should not be fed to IYC.[1]

Processed meat is defined by WHO as:

> *"meat that has been transformed through salting, curing, fermentation, smoking or other processes to enhance flavour or improve preservation. Most processed meats contain pork or beef, but processed meats may also contain other red meats, poultry, offal or meat by-products such as blood".*[2]

Processed meat often has very high levels of salt (sodium) and also has been designated as a Class 1 carcinogen *(51)*.

This group does not include processed fish or shellfish.

Table A6.10. Examples of processed meat

Common name
Hot dogs (frankfurters)
Ham
Sausages
Corned beef
Biltong or beef jerky
Canned meat
Sauces and mixed dishes made with these meats

OTHER MEAT AND POULTRY

All other (not processed) flesh meats from mammals, birds, reptiles and amphibians are included in this group.

Table A6.11. Examples of other meat and poultry

Common name
Beef, goat, lamb, mutton, pork, rabbit, yak, deer, antelope, buffalo or other large wild (bush meat) or domesticated mammals
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 amphibian
Flesh meats prepared using any cooking method are included in this group; that is, even if deep-fried, meat is included here and is not included with "unhealthy" fried and salty foods, because of the importance for IYC of consuming nutrient-dense flesh foods with bioavailable micronutrients.

[1] See, for example, recent guidance from Ireland and Panama: Healthy Ireland. *Feeding your baby: Introducing Family Meals.* Health Service Executive: Dublin; 2018; Ministerio de Salud Panamá. *Guia Alimentaria para menores de 2 años de Panama.* MINSA: Cuidad de Panamá; 2018.

[2] From: https://www.who.int/features/qa/cancer-red-meat/en/, accessed 31 August 2020.

EGGS

This group includes all kinds of bird eggs. Include even if only the white or only the yolk is eaten.

Table A6.12. Types of eggs

Common name
Chicken eggs
Duck eggs
Guinea fowl eggs
Quail eggs

FISH AND SHELLFISH[1]

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

Table A6.13. Types of fish and shellfish

Common name
Fresh, frozen, dried and/or smoked 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

BEANS, PEAS, LENTILS, NUTS OR SEEDS

This group includes pulses (mature edible seeds from leguminous plants including beans, peas and lentils), nuts, and certain seeds.

Pulses

Pulses are members of the plant family *Fabaceae* (alternate name *Leguminoseae*), and includes beans, peas and lentils. The seeds are harvested at maturity and eaten, or 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, frozen or canned in the pod: these are included in the "Other vegetables" group.

It includes mature seeds, sprouted pulses and processed/prepared products, such as hummus, tofu, tempeh, soy cheese, texturized vegetable protein and other soy products and products of any of the pulses listed in the table. However, "milks" such as soy milk are not included, and would be included with "Any other liquids" (Q6J).

[1] Fish roe and snails are not included and are classified with the optional "Insects and other small protein foods" group.

Nuts

This group comprises mostly tree nuts but also includes groundnut (peanut). It also includes nut "butters", such as pounded groundnut/peanut butter or cashew butter.

Nut "milks" such as almond milk are not included and would be included with "Any other liquids" (Q6J). Note that oils extracted from nuts and seeds are not included in this group; they are included in in the optional group "Other fats and oils" or can be included under 7R for "Other solid, semi-solid or soft foods".

Seeds

There are two issues in determining whether and which items to list as examples of seeds in 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 pulses. In culinary systems however, there are usually a limited number of other seeds (i.e. not considered as nuts, grains or pulses), 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 below provides examples.

In most cases, seeds are added to foods in very small quantities and examples should not be included in the questionnaire line 7N. Include seeds as examples in 7N when consumed in substantial quantities. For example, in some part of West Africa, thick soups are made with pumpkin, squash or melon seeds as a main ingredient.

Table A6.14. **Pulses (beans, peas and lentils)**

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

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
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

Table A6.15. Nuts and seeds

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
Peanut/groundnut	*Arachis hypogaea*	Fabaceae	Pod/seed
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
Baobab seed *(monkey bread)*	*Adansonia*	Malvaceae	Seed

Common name *(regional common names)*	*Binomial name OR genus*	Family	Edible part of the plant
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)*	*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
Squash seed	*Cucurbita*	Cucurbitaceae	Seed
Sunflower seed	*Helianthus*	Asteraceae	Seed

CHEESE

This group includes all hard and soft cheeses from animal milk (e.g. milk from cows, goats, buffalo, sheep or camels) but does not include yogurt.

Table A6.16. Examples of hard and soft cheeses

Common names of some types of hard and semi-hard cheeses	Common names of some types of soft, fresh and semi-soft cheeses
Asiago	Brie
Cheddar	Cottage
Gouda	Cream cheese
Swiss	Gorgonzola
Parmesan	Feta
Provolone	Fresh mozzarella
Romano	Paneer
	Ricotta
	Roquefort

SENTINEL SWEET FOODS

Sentinel sweet foods may be confectionery, including baked or fried confections (pies, pastries, etc.) and sugar confections (candies, chocolate). Frozen treats such as ice cream and popsicles are also counted among the sentinel sweet foods.

There are many specific examples of confections in the list below but adapted questionnaires can simply list a category (such as "candy" or "sweets") rather than specific

items. The adapted questionnaire should list the set of sentinel items that are most commonly consumed by IYC in the survey area. For example: "Candy, cakes, pies, sweet biscuits and ice cream".

Table A6.17. Examples of sentinel sweet foods

Examples of sugar confections	Examples of sweet baked or fried confections	Examples of frozen desserts or treats
• caramels • chocolates • divinity • fondant • fruit "gummies" • fruit "leathers" • fudge • halvah • hard candies • jelly candies • licorice • marshmallow • marzipan • mithai • nougat • taffy • toffee • any other sugar confection including those made with boiled and sweetened condensed milk	• baklava • cakes (all types) • cookies/sweet biscuits (all types) • doughnuts and sweet fritters • scones • sweet pies (all types including those made with fruit) • sweet pastries • any other baked or fried confection that is sweet (including those made with fruit)	• ice cream • gelato • sherbet • sorbet • popsicles and ices • other frozen desserts or "treats" including foods made with them

Fruit, even when sweetened with sugar or other sweeteners (e.g. canned in syrup), should not be included in this group. However, fruit pies, fruit-filled pastries and processed fruit products such as candied fruit and fruit "leathers" are considered to be confectionery.

SENTINEL FRIED AND SALTY FOODS

This group includes nutrient-poor foods that may displace healthier foods in IYC diets. These foods contain mainly fat and carbohydrate and have at least a partial base of a refined grain or tuber. They are also often high in sodium.

The food group includes many items that are typically eaten as snacks, but items count for the food group (and the indicator) whether they are eaten as snacks or with a meal (e.g. a meal with French fries or crisps/potato chips).

Examples of the types of food items that can be selected as sentinel items for this food group are listed below.

While there are specific examples in the list below, adapted questionnaires can list a category (e.g. "crisps"), rather than listing specific items. The adapted questionnaire should list the set of sentinel items, or types of items, that are most commonly consumed by IYC in the survey area. For example, the row in the questionnaire could read: "Crisps, corn chips, puffs and French fries".

Table A6.18. Examples of sentinel fried and salty foods

Examples of sentinel fried and salty foods
• Cassava chips, fried cassava balls, other cassava-based fried snacks
• Corn/maize chips/fried tortilla strips
• French fries/chips[1]
• Fried dough
• Fried plantain snacks
• Instant noodles
• Potato chips/crisps[1]
• Puffs (cheese puffs, corn/maize puffs, other "puffs")
• Sweet potato fries or chips
• Other deep-fried, mainly carbohydrate-based, snack foods

ITEMS THAT DO NOT FIT IN ANY OF THE FOOD CATEGORIES FROM 7A–7Q

Some items which IYC may have consumed are not listed within the food lists for any group in 7A–7Q. This includes ingredients that primarily provide flavour and which may be 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 and universal list of such items, but the examples listed below should help guide users to configure this category so that interviewers are aware that these items do not fall into any group from 7A–7Q and should be listed under 7R for "Other solid, semi-solid or soft foods". Some of these items do not actually belong to any food group in 7A–7Q (e.g. bouillon cubes, mustard, pepper sauce) while others belong to a food group and can also be highly nutritious (e.g. bean pastes, fish powder, garlic, herbs). However, items listed below which do have a parent group in 7A–7Q are not included within food lists for these groups because the amounts usually consumed by IYC are too small to provide much nutrition and are thus too small to "count".

- Bean pastes and fermented bean pastes
- Bouillon cubes, flavouring cubes
- Chili peppers (hot)
- Chives
- Chutney or pickle (British)
- Dried seasoning packets (e.g. for soup or instant noodles)
- Fish powder
- Fish sauce
- Garlic
- Ginger root

[1] Fried potato sticks are "French fries" in American English and at some fast-food establishments, and "chips" in British English. Fried or baked thin potato snacks are "crisps" in British English and "chips" in American English.

- Horseradish
- Herbs, fresh and dried, all types
- Mayonnaise
- Monosodium glutamate (MSG) and flavouring products made with MSG
- Mustard, dry and prepared
- Pepper sauce
- Soy sauce, tamari
- Spices, fresh and dried, all types
- Sugar
- Tomato paste or sauce, canned; ketchup/catsup
- Any other salty, sweet or spicy sauces
- Any other seasoning or flavouring
- Any coating (e.g. flour or bread crumbs)
- Any starches added as thickeners (flour, cornstarch, etc.)

CLASSIFICATION CHALLENGES[1]

Table A6.19 presents some food classification challenges. While there are no perfect solutions to some challenges, standardizing classification can help ensure comparability between surveys, and in general we recommend a standard approach to these difficult choices.

The table shows several types of items that 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; and fortified or biofortified foods.

In general, simple food group recalls are designed to capture information about consumption of unfortified foods. Capturing information about fortified foods and estimating coverage for specialized fortified products may require other approaches, questions and indicators. Resources related to fortification are available at: https://www.gainhealth.org/knowledge-centre/the-fortification-assessment-coverage-toolkit-fact/

The classification suggestions 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.

[1] This section is adapted from: FAO and FHI 360. Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO; 2016, Appendix 2: 63-65.

Table A6.19. Classification challenges

Item	Questionnaire category and comments
Biofortified foods	Classify as usual; e.g. biofortified maize should be classified with "Foods made from grains". If desired, add separate questions or modules to capture information on consumption of biofortified crops or varieties.
Blended fortified foods such as corn-soy blend, wheat-soy blend, donated commodities or local blends/fortified cereals	Classify with main ingredient (usually grain). If desired, add separate questions to capture prevalence of consumption of specific fortified foods or products on the recall day, or entire modules to address other questions related to use of fortified products.
Coconut flesh	"Other fruits"
Coconut milk[a]	"Other liquids" or "Other fats and oils" if a separate line item for this group was added during country customization.
Coconut water	"Other liquids"
Fortified foods and products	Classify as if unfortified; e.g. bread made with flour of a fortified grain should be classified with "Foods made from grains". If desired, add separate questions to capture prevalence of intake of specific fortified foods or products on the recall day, or entire modules to address other questions related to their use.
Fruits, canned with or without sugar syrup	"Vitamin A-rich fruit" or "Other fruits", depending on the type of fruit.
Ready-to-use therapeutic food, ready-to-use supplementary food	These specialized products are sometimes distributed to IYC. Classify based on main ingredient. If desired, add separate questions to capture prevalence of intake of specific fortified foods or products on the recall day, or entire modules to address other questions related to use of fortified products.
Samosas and similar savoury fried pastries	Would be considered a mixed dish, or as a "Sentinel fried and salty food". If mainly oil and refined grain and tubers, it should be the latter. Generally, if potato is the major filling, and the coating is refined grain and oil, samosas should be put into the line "Sentinel fried and salty food". If meat or vegetables constitute the major filling, then it can be considered a mixed dish and any meat or vegetables used in the filling can be put in their corresponding line items.
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 (see **Box A6.1**), it can be classified with "Dark green leafy vegetables".
Snails	"Insects and other small protein foods"

Item	Questionnaire category and comments
Street foods/other mixed foods prepared outside the home	Common items can be placed in their respective group(s) when the questionnaire is adapted. In open recalls, probe for main ingredients. If mainly one ingredient, place in category for the main ingredient (e.g. porridges, rice dishes in "Foods made from grain"). If fried snacks or similar, place in category for "Sentinel fried and salty foods". If sweet snacks/confections, place in the category "Sentinel sweet foods".
Sweetened condensed milk	"Sentinel sweet foods" if boiled and served as a sweet. When added to tea or other beverages, should be considered as a sweetener (e.g. ask follow-up Question Q6Hswt for sweet tea, etc.).
Vegetable juices	"Other liquids"

[a] This food is not part of any indicator calculation, so this classification choice does not affect any 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 as an optional question line about "Other fats and oils". In other areas, it can be listed under "Any other liquids".

ANNEX 7: SYNTAX FOR CALCULATING INDICATORS AND CONSTRUCTING AREA GRAPHS

7.1. STATA SYNTAX

```
* IYCF 2020.
* Sample code for Infant and Young Chld Feeding indicators
log using “IYCF indicators.log”, replace
use “IYCF_sample.dta”, clear

* Set global vars for responses
global Yes 1
global No  2
global DK  9
* DK = Don’t know
* These can be customized to the coding used in your survey, e.g.
* global Yes 1
* global No  0
* global DK  8

* Set sample weight
gen wt = sample_weight
* Construct or use strata variable, depending on the survey design, e.g.
egen strata = group(region residence)
* Set the survey design
svyset cluster [pw=wt], strata(strata)

* Calculate days since birth and age in days from date of birth and date of
interview
* Days since birth includes dead children, age in days is only for living
children

* code below assumes month and year of birth are both given, but not
necessarily day of birth
* if month or year of birth are not given, a more complicated imputation
process will be needed

* if day of birth given
gen     dayssincebirth = mdy(intm,intd,inty) - mdy(birthm,birthd,birthy) if
inrange(birthd,1,31)
* if day of birth not given, either use 15 for day of birth
gen bday = 15
* or impute a random day of birth using the following lines of code
*replace bday = runiformint(1,31) if !inrange(birthd,1,31) &
inlist(birthm,1,3,5,7,8,10,12) // January, March, May, July, August,
October, December
```

```
*replace bday = runiformint(1,30) if !inrange(birthd,1,30) & inlist(birthm,4,6,9,11)
// April, June, September, November
*replace bday = runiformint(1,29) if !inrange(birthd,1,29) & birthm == 2 &
mod(birthy,4)==0 // February, leap year
*replace bday = runiformint(1,28) if !inrange(birthd,1,28) & birthm == 2 &
mod(birthy,4)!=0 // February, non-leap year
* impute days since birth
replace dayssincebirth = mdy(intm,intd,inty) - mdy(birthm,bday  ,birthy) if
!inrange(birthd,1,31)
lab var dayssincebirth “Days since birth”

* Age in days is the same as days since birth, but just for living children
gen agedays = dayssincebirth if living == $Yes
lab var agedays “Age in days”
gen agemonths = int(agedays/30.4375)
lab var agemonths “Age in months”

* 1. Ever breastfed (EvBF)
gen evbf = (q1 == $Yes) * 100 if (dayssincebirth < 730)
lab var evbf “Ever breastfed”
svy: mean evbf

* 2. Early initiation of breastfeeding (EIBF)
gen eibf = (q2 == 0 | q2 == 100) * 100 if (dayssincebirth < 730)
lab var eibf “Early initiation of breastfeeding”
svy: mean eibf

* 3. Exclusively breastfed in the first 2 days after birth (EBF2D)
gen ebf2d = (q3 == $No) * 100 if (dayssincebirth < 730)
lab var ebf2d “Exclusively breastfed in the first 2 days after birth”
svy: mean ebf2d

* 4. Exclusive breastfeeding under 6 months (EBF)
gen allno = 1
foreach q of varlist q6? q7? {
  if (“`q’” != “q7s”) { // exclude q7s
    replace allno = 0 if `q’ != $No
  }
}
gen ebf = (q4 == $Yes & allno == 1) * 100 if (agedays < 183)
lab var ebf “Exclusive breastfeeding under 6 months”
svy: mean ebf
```

```
* 5. Mixed feeding with breastmilk plus formula and/or animal milk under 6 months
(MixMF)
gen mixmf = (q4 == $Yes & (q6b == $Yes | q6c == $Yes)) * 100 if (agedays < 183)
lab var mixmf "Mixed feeding with breastmilk plus formula and/or animal milk under 6
months"
svy: mean mixmf

* 6. Continued breastfeeding 12-23 months (CBF)
gen cbf = (q4 == $Yes) * 100 if (agedays >= 365 & agedays < 730)
lab var cbf "Continued breastfeeding 12-23 months"
svy: mean cbf

* 7. Introduction of solid, semi-solid or soft foods 6-8 months (ISSSF)
gen anyfood = 0
foreach q of varlist q7? {
  if ("`q'" != "q7s") { // exclude q7s
    replace anyfood = 1 if `q' == $Yes
  }
}
gen isssf = (anyfood == 1) * 100 if (agedays >= 183 & agedays < 274)
drop anyfood
lab var isssf "Introduction of solid, semi-solid or soft foods 6-8 months"
svy: mean isssf

* 8. Minimum dietary diversity 6-23 months (MDD)
gen foodgroups = 0
*1. Breastmilk
replace foodgroups = foodgroups+1 if q4  == $Yes
*2. Grains, white/pale starchy roots, tubers, and plantains
replace foodgroups = foodgroups+1 if q7b == $Yes | q7d == $Yes
*3. Beans, peas, lentils, nuts and seeds
replace foodgroups = foodgroups+1 if q7n == $Yes
*4. Dairy products (milk, infant formula, yogurt, cheese)
replace foodgroups = foodgroups+1 if q6b == $Yes | q6c == $Yes | q6d == $Yes | q7a ==
$Yes | q7o == $Yes
*5. Flesh foods (meat, fish, poultry, organ meats)
replace foodgroups = foodgroups+1 if q7i == $Yes | q7j == $Yes | q7k == $Yes | q7m ==
$Yes
*6. Eggs
replace foodgroups = foodgroups+1 if q7l == $Yes
*7. Vitamin-A rich fruits and vegetables
replace foodgroups = foodgroups+1 if q7c == $Yes | q7e == $Yes | q7g == $Yes
*8. Other fruits and vegetables
replace foodgroups = foodgroups+1 if q7f == $Yes | q7h == $Yes
```

```
gen mdd = (foodgroups >= 5) * 100 if (agedays >= 183 & agedays < 730)
lab var mdd "Minimum dietary diversity 6-23 months"
svy: mean mdd

* 9. Minimum meal frequency 6-23 months (MMF)
gen feeds = 0 if q4 != $Yes
replace feeds = feeds+q6bnum if q4 != $Yes & inrange(q6bnum,1,7)
replace feeds = feeds+q6cnum if q4 != $Yes & inrange(q6cnum,1,7)
replace feeds = feeds+q6dnum if q4 != $Yes & inrange(q6dnum,1,7)
replace feeds = feeds+q8     if q4 != $Yes & inrange(q8    ,1,7)

* currently breastfeeding and 6-8 months
gen     mmf = (inrange(q8,2,7)) if q4 == $Yes & agedays >= 183 & agedays < 274
* currently breastfeeding and 9-23 months
replace mmf = (inrange(q8,3,7)) if q4 == $Yes & agedays >= 274 & agedays < 730
* not currently breastfeeding and 6-23 months
replace mmf = (feeds >= 4 & inrange(q8,1,7)) if q4 != $Yes & agedays >= 183 & agedays
< 730
replace mmf = mmf * 100
lab var mmf "Minimum meal frequency 6-23 months"
svy: mean mmf

* 10. Minimum milk feeding frequency for non-breastfed children 6-23 months (MMFF)
gen     milkfeeds = 0 if q4 != $Yes
replace milkfeeds = milkfeeds+q6bnum if q4 != $Yes & inrange(q6bnum,1,7)
replace milkfeeds = milkfeeds+q6cnum if q4 != $Yes & inrange(q6cnum,1,7)
replace milkfeeds = milkfeeds+q6dnum if q4 != $Yes & inrange(q6dnum,1,7)
replace milkfeeds = milkfeeds+q7anum if q4 != $Yes & inrange(q7anum,1,7)

gen mmff = (milkfeeds >= 2) * 100 if q4 != $Yes & (agedays >= 183 & agedays < 730)
lab var mmff "Minimum milk feeding frequency for non-breastfed children 6-23 months"
svy: mean mmff

* 11. Minimum acceptable diet 6-23 months (MAD)
gen mad = (mdd == 100 & mmf == 100 & (q4 == $Yes | mmff == 100)) * 100 if (agedays >=
183 & agedays < 730)
lab var mad "Minimum acceptable diet 6-23 months"
svy: mean mad

* 12. Egg and/or flesh food consumption 6-23 months (EFF)
gen eff = (q7i == $Yes | q7j == $Yes | q7k == $Yes | q7l == $Yes | q7m == $Yes) * 100
if (agedays >= 183 & agedays < 730)
lab var eff "Egg and/or flesh food consumption 6-23 months"
svy: mean eff
```

```
* 13. Sweet beverage consumption 6-23 months (SWB)
gen swb = (q6cswt == $Yes | q6dswt == $Yes | q6e == $Yes | q6f == $Yes | q6g == $Yes |
q6hswt == $Yes | q6jswt == $Yes) * 100 ///
  if (agedays >= 183 & agedays < 730)
lab var swb "Sweet beverage consumption 6-23 months"
svy: mean swb

* 14. Unhealthy food consumption 6-23 months (UFC)
gen ufc = (q7p == $Yes | q7q == $Yes) * 100 if (agedays >= 183 & agedays < 730)
lab var ufc "Unhealthy food consumption 6-23 months"
svy: mean ufc

* 15. Zero vegetable or fruit consumption 6-23 months (ZVF)
gen zvf = (q7c == $No & q7e == $No & q7f == $No & q7g == $No & q7h == $No) * 100 if
(agedays >= 183 & agedays < 730)
lab var zvf "Zero vegetable or fruit consumption 6-23 months"
svy: mean zvf

* 16. Bottle feeding 0-23 months (BoF)
gen bof = (q5 == $Yes) * 100 if (agedays < 730)
lab var bof "Bottle feeding 0-23 months"
svy: mean bof

* Area graph:
gen anyfood  = 0
gen nofood   = 1
gen noliquid = 1
foreach q of varlist q7? {
  if ("`q'" != "q7s") { // exclude q7s - any solid, semi-solid or soft food
    replace anyfood = 1 if `q' == $Yes
    replace nofood  = 0 if `q' != $No
  }
}
foreach q of varlist q6? {
  if ("`q'" != "q6a") { // exclude q6a - plain water
    replace noliquid = 0 if `q' != $No
  }
}

* Initialize feeding variable for the missing category
gen feeding = 7
* Not breastfed
replace feeding = 6 if q4 != $Yes
* Breastmilk and solid, semi-solid, and soft foods
replace feeding = 5 if q4 == $Yes & anyfood
```

```
* Breastmilk and other animal milk and/or formula
replace feeding = 4 if q4 == $Yes & nofood & ///
                    (q6b == $Yes | q6c == $Yes | q6d == $Yes)
* Breastmilk and non-milk liquids
replace feeding = 3 if q4 == $Yes & nofood & ///
                    (q6b == $No  & q6c == $No  & q6d == $No ) & ///
                                (q6e == $Yes | q6f == $Yes | q6g == $Yes | q6h == $Yes
| q6i == $Yes | q6j == $Yes)
* Breastmilk and plain water
replace feeding = 2 if q4 == $Yes & q6a == $Yes & nofood & noliquid
* Breastmilk only (exclusively breastfed)
replace feeding = 1 if q4 == $Yes & q6a == $No  & nofood & noliquid
lab var feeding “Feeding categories”
lab def feeding ///
1 “Exclusively breastfed” ///
2 “Breastfed and plain water only” ///
3 “Breastfed and non-milk liquids” ///
4 “Breastfed and other milk or formula” ///
5 “Breastfed and solid, semi-solid, or soft foods” ///
6 “Not breastfed” ///
7 “Unknown”
lab val feeding feeding

* Age in 2-month groups
gen ageg = int(agedays/(2*30.4375)) // average of 30.4375 days per month
lab var ageg “age in 2-month groups”
lab def ageg 0 “0-1” 1 “2-3” 2 “4-5”
lab val ageg ageg

* Tabulate feeding categories by age group
svy: tab ageg feeding if ageg < 3, row

* if using the Powerpoint template for the area graph, stop here and use the svy: tab
output.
* you want the Stata produced area graph, continue with the code below.

* Capture matrix of cell proportions
mat feeding=e(Prop)
* Save as a set of feeding variables in the first 3 cases
svmat feeding
* Drop the matrix
cap mat drop feeding

* Add a variable for the 3 age groups
gen ageg2 = _n-1 in 1/3
lab var ageg2 “Age group in months”
lab val ageg2 ageg
```

```
* Produce cumulative proportions across the feeding groups with each age group
forvalues x = 2/7 {
  local y = `x'-1
  replace feeding`x' = feeding`x' + feeding`y'
}
* Convert to cumulative percents within each age group
forvalues x = 1/7 {
  replace feeding`x' = 100 * feeding`x' / feeding7
}

* Plot the area graph of feeding by age group
twoway area feeding7 feeding6 feeding5 feeding4 feeding3 feeding2 feeding1 ageg2 in
1/3, ///
xlabel(0 "0-1" 1 "2-3" 2 "4-5") ///
ylabel(0 "0%" 20 "20%" 40 "40%" 60 "60%" 80 "80%" 100 "100%", angle(0)) ///
legend(position(9) cols(1) size(tiny) symxsize(3) ///
order( ///
1 "Unknown" ///
2 "Not breastfed" ///
3 "Breastfed and solid," "semi-solid, or soft foods" ///
4 "Breastfed and" "other milk or formula" ///
5 "Breastfed and" "non-milk liquids" ///
6 "Breastfed and" "plain water only" ///
7 "Exclusively" "breastfed" ///
))

* Clean up to drop the extra variables and matrices created just for the graph
cap drop feeding1 feeding2 feeding3 feeding4 feeding5 feeding6 feeding7 ageg2

log close
```

7.2. SPSS SYNTAX

```
* IYCF 2020.
* Sample code for Infant and Young Chld Feeding indicators.
get file= “IYCF_sample.sav”.
dataset name IYCF.

* Set global vars for responses.
define Yes () 1 !enddefine.
define No  () 2 !enddefine.
define DK  () 9 !enddefine.
* DK = Don’t know.
* These can be customized to the coding used in your survey, e.g.
*define Yes () 1 !enddefine.
*define No  () 0 !enddefine.
*define DK  () 8 !enddefine.

* Set sample weight.
compute wt = sample_weight.
weight by wt.
* Construct or use strata variable, depending on the survey design, e.g.
compute strata = 2*region+residence-1.
* Set the survey design - used with complex sample descriptives.
csplan analysis
  /plan file=”IYCF_sample.csaplan”
  /planvars analysisweight=wt
  /SRSestimator type=wor
  /design strata=strata cluster=cluster
  /estimator type=wr.

* Calculate days since birth and age in days from date of birth and date of interview.
* Days since birth includes dead children, age in days is only for living children.

* code below assumes month and year of birth are both given, but not necessarily day
of birth.
* if month or year of birth are not given, a more complicated imputation process will
be needed.

* if day of birth given.
if (range(birthd,1,31)) dayssincebirth = datediff(date.dmy(intd,intm,inty),date.
dmy(birthd,birthm,birthy), ‘days’).
* if day of birth not given, either use 15 for day of birth.
compute bday = 15.
* or impute a random day of birth using the following lines of code.
*if (not range(birthd,1,31) & any(birthm,1,3,5,7,8,10,12)  ) bday =
int(31*uniform())+1  /* January, March, May, July, August, October, December.
```

```
*if (not range(birthd,1,30) & any(birthm,4,6,9,11)         ) bday =
int(30*uniform())+1  /* April, June, September, November.
*if (not range(birthd,1,29) & birthm = 2 & mod(birthy,4)=0 ) bday =
int(29*uniform())+1  /* February, leap year.
*if (not range(birthd,1,28) & birthm = 2 & mod(birthy,4)<>0) bday =
int(28*uniform())+1  /* February, non-leap year.
* impute age in days.
if (not range(birthd,1,31)) dayssincebirth = datediff(date.dmy(intd,intm,inty),date.
dmy(bday  ,birthm,birthy), 'days').
variable labels dayssincebirth "Days since birth".

* Age in days is the same as days since birth, but just for living children.
if (living = Yes) agedays = dayssincebirth.
variable labels agedays "Age in days".
compute agemonths = trunc(agedays/30.4375).
variable labels agemonths "Age in months".

* Currently breastfeeding - treat missing and DK like No.
compute bf = q4.
if (missing(bf)) bf = No.

* 1. Ever breastfed (EvBF).
do if (dayssincebirth < 730).
+ compute evbf = (q1 = Yes) * 100.
+ recode evbf (missing=0).
end if.
variable labels evbf "Ever breastfed".
means evbf.
* or use complex sample descriptives.
csdescriptives /plan file="IYCF_sample.csaplan" /summary variables=evbf /mean /
statistics se cin(95).

* 2. Early initiation of breastfeeding (EIBF).
do if (dayssincebirth < 730).
+ compute eibf = (q2 = 0 | q2 = 100) * 100.
+ recode eibf (missing=0).
end if.
variable labels eibf "Early initiation of breastfeeding".
means eibf.
* or use complex sample descriptives.
csdescriptives /plan file="IYCF_sample.csaplan" /summary variables=eibf /mean /
statistics se cin(95).

* 3. Exclusively breastfed in the first 2 days after birth (EBF2D).
do if (dayssincebirth < 730).
+ compute ebf2d = (q3 = No) * 100.
```

```
+ recode ebf2d (missing = 0).
end if.
variable labels ebf2d “Exclusively breastfed in the first 2 days after birth”.
means ebf2d.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=ebf2d /mean /
statistics se cin(95).

* 4. Exclusive breastfeeding under 6 months (EBF).
do if (agedays < 183).
+ compute allno = (q6a = No & q6b = No & q6c = No & q6d = No & q6e = No & q6f = No &
q6g = No & q6h = No & q6i = No & q6j = No &
+                  q7a = No & q7b = No & q7c = No & q7d = No & q7e = No & q7f = No &
q7g = No & q7h = No & q7i = No & q7j = No &
+                  q7k = No & q7l = No & q7m = No & q7n = No & q7o = No & q7p = No &
q7q = No & q7r = No).
+ compute ebf = (bf = Yes & allno = 1) * 100.
+ recode ebf (missing = 0).
end if.
variable labels ebf “Exclusive breastfeeding under 6 months”.
means ebf.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=ebf /mean /
statistics se cin(95).

* 5. Mixed breast- and non-breastmilk feeding under 6 months (MixMF).
do if (agedays < 183).
+ compute mixmf = (bf = Yes & (q6b = Yes | q6c = Yes)) * 100.
+ recode mixmf (missing = 0).
end if.
variable labels mixmf “Mixed breast- and non-breastmilk feeding under 6 months”.
means mixmf.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=mixmf /mean /
statistics se cin(95).

* 6. Continued breastfeeding 12-23 months (CBF).
do if (agedays >= 365 & agedays < 730).
+ compute cbf = (bf = Yes) * 100.
+ recode cbf (missing = 0).
end if.
variable labels cbf “Continued breastfeeding 12-23 months”.
means cbf.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=cbf /mean /
```

```
statistics se cin(95).

* 7. Introduction of solid, semi-solid or soft foods 6-8 months (ISSSF).
do if (agedays >= 183 & agedays < 274).
+ compute anyfood =  (q7a = Yes | q7b = Yes | q7c = Yes | q7d = Yes | q7e = Yes | q7f
= Yes | q7g = Yes | q7h = Yes | q7i = Yes | q7j = Yes |
+                     q7k = Yes | q7l = Yes | q7m = Yes | q7n = Yes | q7o = Yes | q7p =
Yes | q7q = Yes | q7r = Yes).
+ compute isssf = (anyfood = 1) * 100.
+ recode isssf (missing = 0).
end if.
variable labels isssf “Introduction of solid, semi-solid or soft foods 6-8 months”.
means isssf.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=isssf /mean /
statistics se cin(95).

* 8. Minimum dietary diversity 6-23 months (MDD).
compute foodgroups = 0.
*1. Breastmilk.
if (bf  = Yes) foodgroups = foodgroups+1.
*2. Grains, white/pale starchy roots, tubers, and plantains.
if (q7b = Yes | q7d = Yes) foodgroups = foodgroups+1.
*3. Beans, peas, lentils, nuts and seeds.
if (q7n = Yes) foodgroups = foodgroups+1.
*4. Dairy products (milk, infant formula, yogurt, cheese).
if (q6b = Yes | q6c = Yes | q6d = Yes | q7a = Yes | q7o = Yes) foodgroups =
foodgroups+1.
*5. Flesh foods (meat, fish, poultry, organ meats).
if (q7i = Yes | q7j = Yes | q7k = Yes | q7m = Yes) foodgroups = foodgroups+1.
*6. Eggs.
if (q7l = Yes) foodgroups = foodgroups+1.
*7. Vitamin-A rich fruits and vegetables.
if (q7c = Yes | q7e = Yes | q7g = Yes) foodgroups = foodgroups+1.
*8. Other fruits and vegetables.
if (q7f = Yes | q7h = Yes) foodgroups = foodgroups+1.

do if (agedays >= 183 & agedays < 730).
+ compute mdd = (foodgroups >= 5) * 100.
end if.
variable labels mdd “Minimum dietary diversity 6-23 months”.
means mdd.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=mdd /mean /
```

```
statistics se cin(95).

* 9. Minimum meal frequency 6-23 months (MMF).
compute feeds = 0.
if (range(q6bnum,1,7)) feeds = feeds+q6bnum.
if (range(q6cnum,1,7)) feeds = feeds+q6cnum.
if (range(q6dnum,1,7)) feeds = feeds+q6dnum.
if (range(q8    ,1,7)) feeds = feeds+q8.

do if (agedays >= 183 & agedays < 730).
+ if (bf = Yes & agedays >= 183 & agedays < 274) mmf = (range(q8,2,7)) * 100.
+ if (bf = Yes & agedays >= 274 & agedays < 730) mmf = (range(q8,3,7)) * 100.
+ if (bf <> Yes) mmf = (feeds >= 4 & range(q8,1,7)) * 100.
end if.
variable labels mmf "Minimum meal frequency 6-23 months".
means mmf.
* or use complex sample descriptives.
csdescriptives /plan file="IYCF_sample.csaplan" /summary variables=mmf /mean /
statistics se cin(95).

* 10. Minimum milk feeding frequency for non-breastfed children 6-23 months (MMFF).
compute milkfeeds = 0.
if (range(q6bnum,1,7)) milkfeeds = milkfeeds+q6bnum.
if (range(q6cnum,1,7)) milkfeeds = milkfeeds+q6cnum.
if (range(q6dnum,1,7)) milkfeeds = milkfeeds+q6dnum.
if (range(q7anum,1,7)) milkfeeds = milkfeeds+q7anum.

do if (bf <> Yes & agedays >= 183 & agedays < 730).
+ compute mmff = (milkfeeds >= 2) * 100.
+ recode mmff (missing = 0).
end if.
variable labels mmff "Minimum milk feeding frequency for non-breastfed children 6-23
months".
means mmff.
* or use complex sample descriptives.
csdescriptives /plan file="IYCF_sample.csaplan" /summary variables=mmff /mean /
statistics se cin(95).

* 11. Minimum acceptable diet 6-23 months (MAD).
do if (agedays >= 183 & agedays < 730).
+ compute mad = (mdd = 100 & mmf = 100 & (bf = Yes | mmff = 100)) * 100.
+ recode mad (missing = 0).
end if.
variable labels mad "Minimum acceptable diet 6-23 months".
means mad.
* or use complex sample descriptives.
```

```
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=mad /mean /
statistics se cin(95).

* 12. Egg and/or flesh food consumption 6-23 months (EFF).
do if (agedays >= 183 & agedays < 730).
+ compute eff = (q7i = Yes | q7j = Yes | q7k = Yes | q7l = Yes | q7m = Yes) * 100.
+ recode eff (missing  = 0).
end if.
variable labels eff “Egg and/or flesh food consumption 6-23 months”.
means eff.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=eff /mean /
statistics se cin(95).

* 13. Sweet beverage consumption 6-23 months (SWB).
do if (agedays >= 183 & agedays < 730).
+ compute swb = (q6cswt = Yes | q6dswt = Yes | q6e = Yes | q6f = Yes | q6g = Yes |
q6hswt = Yes | q6jswt = Yes) * 100.
+ recode swb (missing = 0).
end if.
variable labels swb “Sweet beverage consumption 6-23 months”.
means swb.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=swb /mean /
statistics se cin(95).

* 14. Unhealthy food consumption 6-23 months (UFC).
do if (agedays >= 183 & agedays < 730).
+ compute ufc = (q7p = Yes | q7q = Yes) * 100.
+ recode ufc (missing = 0).
end if.
variable labels ufc “Unhealthy food consumption 6-23 months”.
means ufc.
* or use complex sample descriptives.
csdescriptives /plan file=”IYCF_sample.csaplan” /summary variables=ufc /mean /
statistics se cin(95).

* 15. Zero vegetable or fruit consumption 6-23 months (ZVF).
do if (agedays >= 183 & agedays < 730).
+ compute zvf = (q7c = No & q7e = No & q7f = No & q7g = No & q7h = No) * 100.
+ recode zvf (missing = 0).
end if.
variable labels zvf “Zero vegetable or fruit consumption 6-23 months”.
means zvf.
* or use complex sample descriptives.
```

```
csdescriptives /plan file="IYCF_sample.csaplan" /summary variables=zvf /mean /
statistics se cin(95).

* 16. Bottle feeding 0-23 months (BoF).
do if (agedays < 730).
+ compute bof = (q5 = Yes) * 100.
+ recode bof (missing = 0).
end if.
variable labels bof "Bottle feeding 0-23 months".
means bof.
* or use complex sample descriptives.
csdescriptives /plan file="IYCF_sample.csaplan" /summary variables=bof /mean /
statistics se cin(95).


* Area graph.
* Age in 2-month groups.
compute ageg = trunc(agedays/(2*30.4375)). /* average of 30.4375 days per month.
variable labels ageg "Age in 2-month groups".
value labels ageg 0 "0-1" 1 "2-3" 2 "4-5".
* Select for children age 0-5.
compute filter_$=(ageg <= 2).
filter by filter_$.
execute.

* Any food (except for q7s - any solid, semi-solid, or soft food (captured elsewhere)
).
compute anyfood = (q7a = Yes | q7b = Yes | q7c = Yes | q7d = Yes | q7e = Yes | q7f =
Yes | q7g = Yes | q7h = Yes | q7i = Yes | q7j = Yes |
                     q7k = Yes | q7l = Yes | q7m = Yes | q7n = Yes | q7o = Yes | q7p =
Yes | q7q = Yes | q7r = Yes).
recode anyfood (missing = 0).
* No food (except for q7s - any solid, semi-solid, or soft food (captured elsewhere)).
compute nofood = (q7a = No & q7b = No & q7c = No & q7d = No & q7e = No & q7f = No &
q7g = No & q7h = No & q7i = No & q7j = No &
                   q7k = No & q7l = No & q7m = No & q7n = No & q7o = No & q7p = No &
q7q = No & q7r = No).
recode nofood (missing = 0).
* No liquid except for plain water - q6a.
compute noliquid = (q6b = No & q6c = No & q6d = No & q6e = No & q6f = No & q6g = No &
q6h = No & q6i = No & q6j = No).
recode noliquid (missing = 0).

* Initialize feeding variable for the missing category.
compute feeding = 7.
* Not breastfed.
if (bf = No) feeding = 6.
```

```
* Breastmilk and solid, semi-solid, and soft foods.
if (bf = Yes & anyfood = 1) feeding = 5.
* Breastmilk and other animal milk and/or formula.
if (bf = Yes & nofood = 1 & (q6b = Yes | q6c = Yes | q6d = Yes | q7a = Yes)) feeding =
4.
* Breastmilk and non-milk liquids.
if (bf = Yes & nofood = 1 & (q6b = No & q6c = No & q6d = No & q7a = No) & (q6e = Yes |
q6f = Yes | q6g = Yes | q6h = Yes | q6i = Yes | q6j = Yes)) feeding = 3.
* Breastmilk and plain water.
if (bf = Yes & nofood = 1 & noliquid = 1 & q6a = Yes) feeding = 2.
* Breastmilk only (exclusively breastfed).
if (bf = Yes & nofood = 1 & noliquid = 1 & q6a = No) feeding = 1.
variable labels feeding “Feeding categories”.
value labels feeding
  1 “Exclusively breastfed”
  2 “Breastfed and plain water only”
  3 “Breastfed and non-milk liquids”
  4 “Breastfed and other milk or formula”
  5 “Breastfed and solid, semi-solid, or soft foods”
  6 “Not breastfed”
  7 “Unknown”.

* Tabulate feeding categories by age group.
crosstabs /tables=ageg by feeding /cells=rows /count asis.
* asis parameter needed to get the correct weighted counts used for the percentages.

* if using the Powerpoint template for the area graph, stop here and use the crosstabs
output.
* you want the SPSS produced area graph, continue with the code below.

* Dichotomize into separate variables.
recode feeding (1=100)(else=0) into feeding1.
recode feeding (2=100)(else=0) into feeding2.
recode feeding (3=100)(else=0) into feeding3.
recode feeding (4=100)(else=0) into feeding4.
recode feeding (5=100)(else=0) into feeding5.
recode feeding (6=100)(else=0) into feeding6.
recode feeding (7=100)(else=0) into feeding7.

* Aggregate the separate variables by age group.
dataset declare aggr1.
aggregate
  /outfile='aggr1'
  /break=ageg
  /feeding1 “Exclusively breastfed”=mean(feeding1)
```

```
  /feeding2 “Breastfed and plain water only”=mean(feeding2)
  /feeding3 “Breastfed and non-milk liquids”=mean(feeding3)
  /feeding4 “Breastfed and other milk or formula”=mean(feeding4)
  /feeding5 “Breastfed and solid, semi-solid, or soft foods”=mean(feeding5)
  /feeding6 “Not breastfed”=mean(feeding6)
  /feeding7 “Unknown”=mean(feeding7).

* Produce the stacked area graph of feeding categories.
dataset activate aggr1.
graph /line(area)= sum(feeding7) sum(feeding6) sum(feeding5) sum(feeding4)
sum(feeding3) sum(feeding2) sum(feeding1) by ageg.
```

ANNEX 8: QUESTIONNAIRE ROWS AND FOOD GROUPS IN MINIMUM DIETARY DIVERSITY (MDD) INDICATOR

Table A8.1 shows how the questionnaire food groups are related to those in the food group score.

Table A8.1. Questionnaire liquid and food groups mapped to MDD food groups

Eight food groups in the food group score used to calculate MDD and MAD	Q#	Food groups as described in the example questionnaire
1. Breast milk	**4**	*(asked separately, not as part of open recall or list-based recall)*
2. Grains, roots and tubers	**7B**	Porridge, bread, rice, noodles, pasta or ***[insert other commonly consumed grains, including foods made from grains like rice dishes, noodle dishes, etc.]***
	7D	Plantains, white potatoes, white yams, manioc, cassava, or ***[insert other commonly consumed starchy tubers or starchy tuberous roots that are white or pale inside]***
3. Legumes, nuts and seeds	**7N**	Beans, peas, lentils, nuts or ***[insert commonly consumed foods made from beans, peas, lentils, nuts, or seeds]***
4. Dairy products (milk, infant formula, yogurt, cheese)	**6B**	Infant formula such as ***[insert local names of common formula]***
	6C	Milk from animals such as fresh, tinned or powdered milk
	6D	Yogurt drinks such as ***[insert local names of common types of yogurt drinks]***
	7A	Yogurt, other than yogurt drinks
	7O	Hard or soft cheese such as ***[insert commonly consumed types of cheese]***
5. Flesh foods (e.g. meat, fish, poultry, organ meats)	**7I**	Liver, kidney, heart or ***[insert other commonly consumed organ meats]***
	7J	Sausages, hot dogs, ham, bacon, salami, canned meat or ***[insert other commonly consumed processed meats]***
	7K	Any other meat such as beef, pork, lamb, goat, chicken, duck or ***[insert other commonly consumed meat]***
	7M	Fresh or dried fish or shellfish
6. Eggs	**7L**	Eggs
7. Vitamin A-rich fruits and vegetables	**7C**	Pumpkin, carrots, sweet red peppers, squash or sweet potatoes that are yellow or orange inside? ***[any additions to this list should meet "Criteria for defining foods and liquids as 'sources' of vitamin A"]***
	7E	Dark green leafy vegetables such as ***[insert commonly consumed vitamin A-rich dark green leafy vegetables]***
	7G	Ripe mangoes, ripe papayas or ***[insert other commonly consumed vitamin A-rich fruits]***
8. Other fruits and vegetables	**7H**	Any other fruits such as ***[insert commonly consumed fruits]***
	7F	Any other vegetables such as ***[insert commonly consumed vegetables]***

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