

# WHO guidelines on complementary feeding – scope and progress

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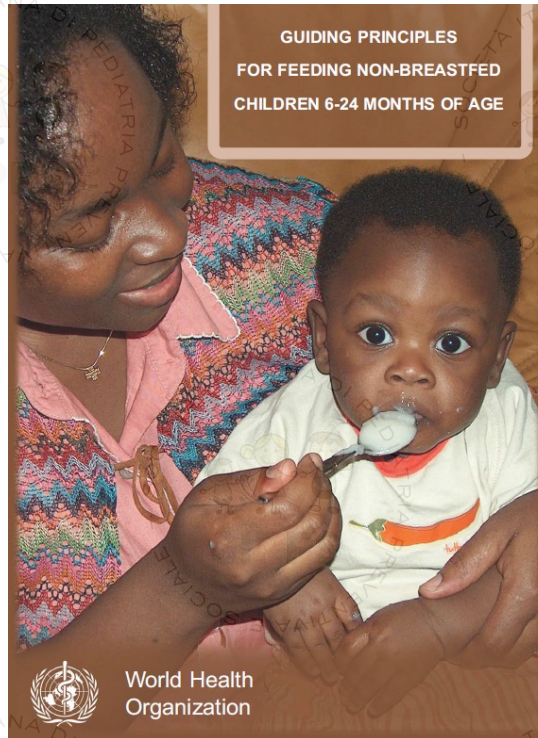
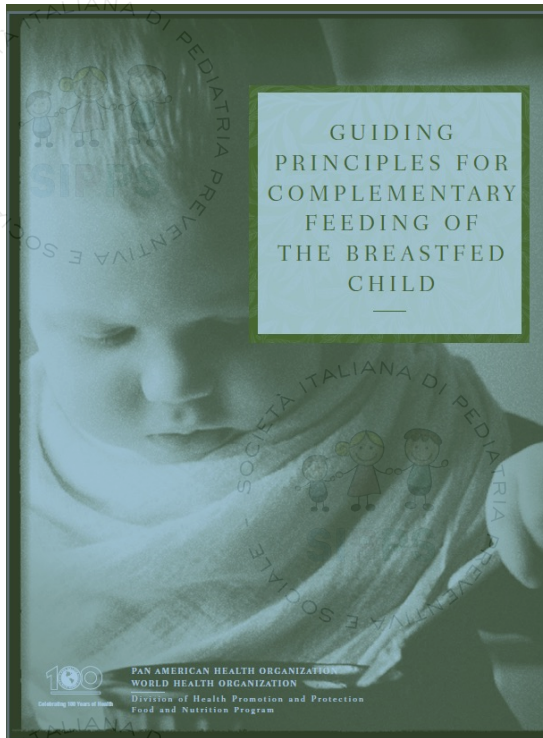
# Why focus on complementary food ?

- The first 2 years of life is a critical period for the developing infant and young child to learn to accept healthy foods and establish long-term dietary patterns that can prevent undernutrition and the onset of obesity.
- Early childhood is now recognized as a critical period for not only the prevention of undernutrition but also the prevention of obesity and NCDs.
- The first 2 years of life are also a critical period for brain development, the acquisition of language and sensory pathways for vision and hearing, and the development of higher cognitive functions.





# WHO guiding principles on complementary feeding



- Published 2003 & 2005
- Focused on adequacy and prevention of nutrient deficiencies
- Quantities specified for energy and number of meals, but not other foods or nutrients

# Guiding Principles - 1

|                        | Breastfed   | Non-breastfed  |
|------------------------|---|--|
| Timing of introduction | At 6 months (180 days)  | n/a  |
| Milk feeding           | Continue frequent, on-demand breastfeeding to 2 years or beyond | If other animal-source foods, ~200-400 mL/d milk needed;<br><br>otherwise, ~300-500 mL/d milk needed |





# Guiding Principles - 2



|                       | Breastfed  |             | Non-breastfed |
|-----------------------|--|-------------|---------------|
| Energy (kcal/day)     | Low-income   | High-income |               |
| 6-8 mos               | 200  | 130         | 600           |
| 9-11 mos              | 300  | 310         | 700           |
| 12-23 mos             | 550  | 580         | 900           |
| Meal frequency (X/d)  |  |             |               |
| 6-8 mos               |  | 2-3         | 4-5           |
| 9-11 mos              |  | 3-4         | 4-5           |
| 12-23 mos             |  | 3-4         | 4-5           |
|                       | More frequently if energy density is low or quantity per meal is small |             |               |
| Snack frequency (X/d) | 1-2  |             | 1-2           |

# Guiding Principles - 3



|                  | Breastfed   | Non-breastfed  |
|------------------|---|--|
| Variety of foods | Meat, poultry, fish, eggs<br>Vitamin A-rich fruits & vegetables<br>Adequate fat | Calcium-rich foods<br>Vitamin C-rich foods<br>Riboflavin, B6, folate |
| Avoid            | Tea, coffee, sugary drinks such as soda<br>Limit amount of juice                |  |

# Guiding Principles - 4



## Food consistency

6+ months  
8+ months  
12+ months

**Breastfed**

**Non-breastfed**

Pureed, mashed, semi-solid  
“finger foods”  
Family foods

Avoid foods that may cause choking

## Food safety

- Wash hands
- Store safely & eat immediately after preparation
- Clean utensils
- Avoid use of feeding bottles





# Guiding Principles - 5



Responsive feeding

- |                              | Breastfed  | Non-breastfed   |
|------------------------------|--|---|
| Responsive feeding           | <ul style="list-style-type: none"><li>a) Feed infants directly, assist older children</li><li>b) Encourage eating but do not force</li><li>c) Experiment with different foods &amp; textures</li><li>d) Minimize distractions during meals</li><li>e) talk to children, eye to eye contact</li></ul> |   |
| Feeding during/after illness |  | <ul style="list-style-type: none"><li>Increase fluid intake</li><li>Encourage soft, appetizing, favorite foods</li><li>Increase feeding after illness</li></ul> |

Feeding during/after illness

Increase fluid intake  
Encourage soft, appetizing, favorite foods  
Increase feeding after illness



# Guiding Principles - 6



|   | Breastfed   | Non-breastfed   |
|---|---|---|
| Vitamin-mineral supplements & fortified foods | Use as needed. Supplements for breastfeeding mothers may be needed. | Iron supplements as needed.<br>Zinc, calcium & B12 if animal-source foods not consumed.<br>Vitamin A in deficient populations |
| Fluid needs                                   | n/a   | At least 400-600 mL/d of extra fluids;<br>800-1200 mL/d in a hot climate  |

# WHO NEW GUIDELINES : 12 PECO QUESTIONS

1. Unhealthy foods and beverages

2. Age of introduction of complementary foods

3. Fruits and vegetables

4. Milks 6-11 months

5. Continued breastfeeding

6. Milks 12-23 months

7. Animal-source foods

8. Nuts and Seeds

9. Responsive feeding

10. Fortified complementary foods

11. Small Quantity Lipid-based Nutrient Supplements

12. Micronutrient Powders

PECO = Population, Exposure, Comparator, Outcome

# METHODOLOGY

## Systematic reviews and meta-analyses

- Risk of bias assessment for Non randomized studies (ROBINS-I)
- Risk of bias for RCT (Cochrane Risk of Bias (Version 2))
- GRADE evidence profile

| Grade    | Definition   |
|----------|--|
| High     | We are very confident that the true effect lies close to that of the estimate of the effect.   |
| Moderate | We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different |
| Low      | Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.  |
| Very Low | We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect   |

## Modelling

- identify food patterns (quantities and frequencies of food subgroup consumption across a one-week period) that met needs for 13 target nutrients, or else minimized deficits.
- data from 16 countries to define modeling parameters for daily serving sizes and for maximum allowable frequencies of consumption for food groups and subgroups
- modified these patterns by 1) eliminating food groups, subgroups, or sets of subgroups, 2) imposing monotonous staple foods or increasing the quantity of staple foods, or 3) including sentinel unhealthy foods or beverages.



# UNHEALTHY FOODS\* AND BEVERAGES

Among children <10 years of age (P), does greater consumption of certain types of foods and beverages (E) compared to less or no consumption of these foods (C) increase the risk of adverse outcomes (O)?

\* Ultra-processed foods based on the NOVA classification; unhealthy foods and beverages defined in infant and young child feeding indicators; foods high in free sugars, artificial sweeteners, salt, and foods high in saturated or trans fats.



# UNHEALTHY FOODS AND BEVERAGES

|            |  |
|------------|--|
| Population | Children <10 years of age - Stratify by age group (<24 months, 24-59 months, 5-9 years)  |
| Exposure   | Consumption of <ul style="list-style-type: none"> <li>a) foods and beverages containing more sugar</li> <li>b) foods or beverages with non-caloric sweeteners</li> <li>c) foods containing more fat (consider the quality of fat)</li> <li>d) foods high in salt</li> <li>e) ultra-processed foods</li> </ul>  |
| Comparator | Consumption of <ul style="list-style-type: none"> <li>a) foods and beverages containing less sugar</li> <li>b) foods and beverages without non-caloric sweeteners</li> <li>c) foods containing less fat</li> <li>d) foods containing less salt</li> <li>e) less or no ultra-processed foods</li> </ul>   |
| Outcomes   | <p>Critical</p> <ul style="list-style-type: none"> <li>a) Growth and body composition (e.g. stunting, wasting, overweight/obesity)</li> <li>b) Displacement of healthy foods/breast milk intake</li> <li>c) Long term outcomes (obesity, NCDs)</li> <li>d) Dietary quality and diversity</li> <li>e) Food/taste preferences later in life (also include food refusal)</li> </ul> <p>Important</p> <ul style="list-style-type: none"> <li>f) Oral health (dental caries)</li> <li>g) Nutrient deficiencies</li> <li>h) Child development</li> </ul> |

# UNHEALTHY FOODS AND BEVERAGES



- In children  $\leq 10$  years, consumption of SSBs and unhealthy foods may increase BMI/BMI z-score, percent fat or odds of overweight/obesity
- Artificially sweetened beverages and 100% fruit juice consumption may make little or no difference to BMI, percent fat or overweight/obesity outcomes
- Unhealthy food and beverage consumption may worsen diet-related NCD indicators; displace healthy foods and decrease dietary quality and diversity
- Significant associations between greater consumption in early life and greater 'liking' or preference for sweetened foods
- Evidence from modelling : inclusion of each type of sentinel unhealthy item (SSB, sweet biscuits, fried crisps) introduced multiple nutrient gaps



# FRUIT & VEGETABLE CONSUMPTION

**For infants and young children 6-23 months of age (P), is more frequent or more varied consumption of fruits or vegetables (E) compared to less frequent or less varied consumption (C) associated with beneficial dietary and health outcomes (O)**



# FRUIT & VEGETABLE CONSUMPTION : Evidence from modelling



increase in iron calcium,  
potassium, and zinc gap  
(variable at different ages)

# ANIMAL SOURCE FOODS

**For infants and young children 6-23 months of age (P), is more frequent consumption or greater amounts of animal source foods (E) compared to less frequent consumption or lower amounts of animal source foods (C) associated with beneficial dietary and health outcomes (O)?**





# ANIMAL SOURCE FOODS

- reduction in wasting was reported among children who consumed fish  $\geq 4$  times/week compared to those who consumed fish 1-3 times/week
- reduction in stunting was reported in children who consume 1 type of ASF when compared to those who consume 0 types of ASF
- Evidence from modelling excluding from the diet meat, poultry, fish, and eggs : increase in iron gap and appearance of gaps of zinc and vitamin B12.



# PULSES AND WHOLEGRAINS

## Evidence from modelling



- Legumes, nuts and seeds excluded from the diets:

- no changes in gaps occurred for any age/feeding group
- when legumes, nuts and seeds were eliminated, other nutrient-dense food groups were increased.

- Whole grains excluded from the diets ;

- iron gap increased and gaps appeared for zinc and thiamine.



# RESPONSIVE FEEDING

- Repeated exposure of vegetables may improve acceptance during the first month from the beginning of the introduction of solid foods.
- Interventions aimed to prevent obesity, delivered by health professionals or health students, may result in benefits with regard to food acceptance, food preferences for some healthy foods, intakes of some healthy foods and intakes of some unhealthy foods and beverages



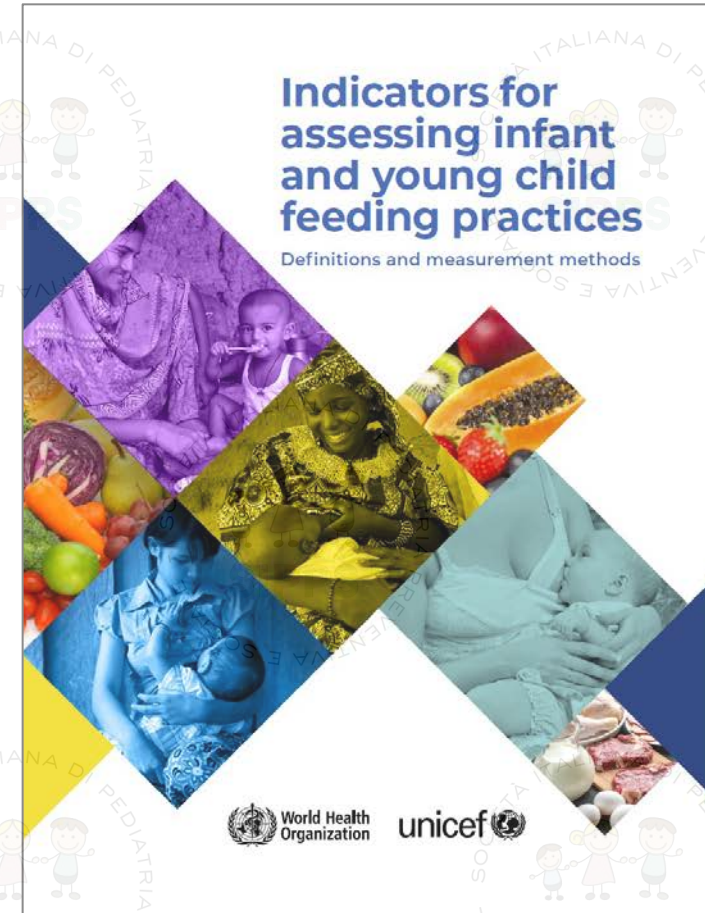


# IYCF INDICATORS MANUAL UPDATED

## New indicators

- Exclusively breastfed in 1<sup>st</sup> 2 days
- Mixed milk feeding < six mos
- Egg and/or flesh food 6–23 months
- Sweet beverage 6–23 months
- Unhealthy food 6–23 months
- Zero vegetable or fruit 6–23 months
- Area graphs < 6 months

Minimum dietary diversity includes breast milk



# UPDATING NUTRIENT INTAKE VALUES

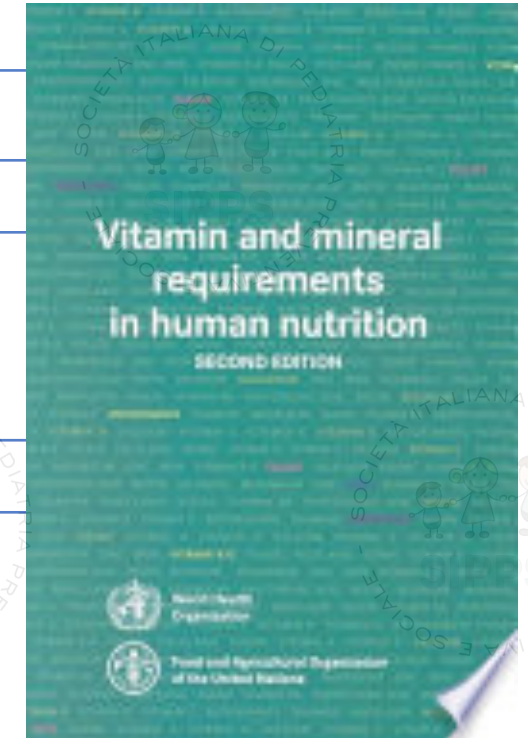
Infants and young children 0–4 years of age

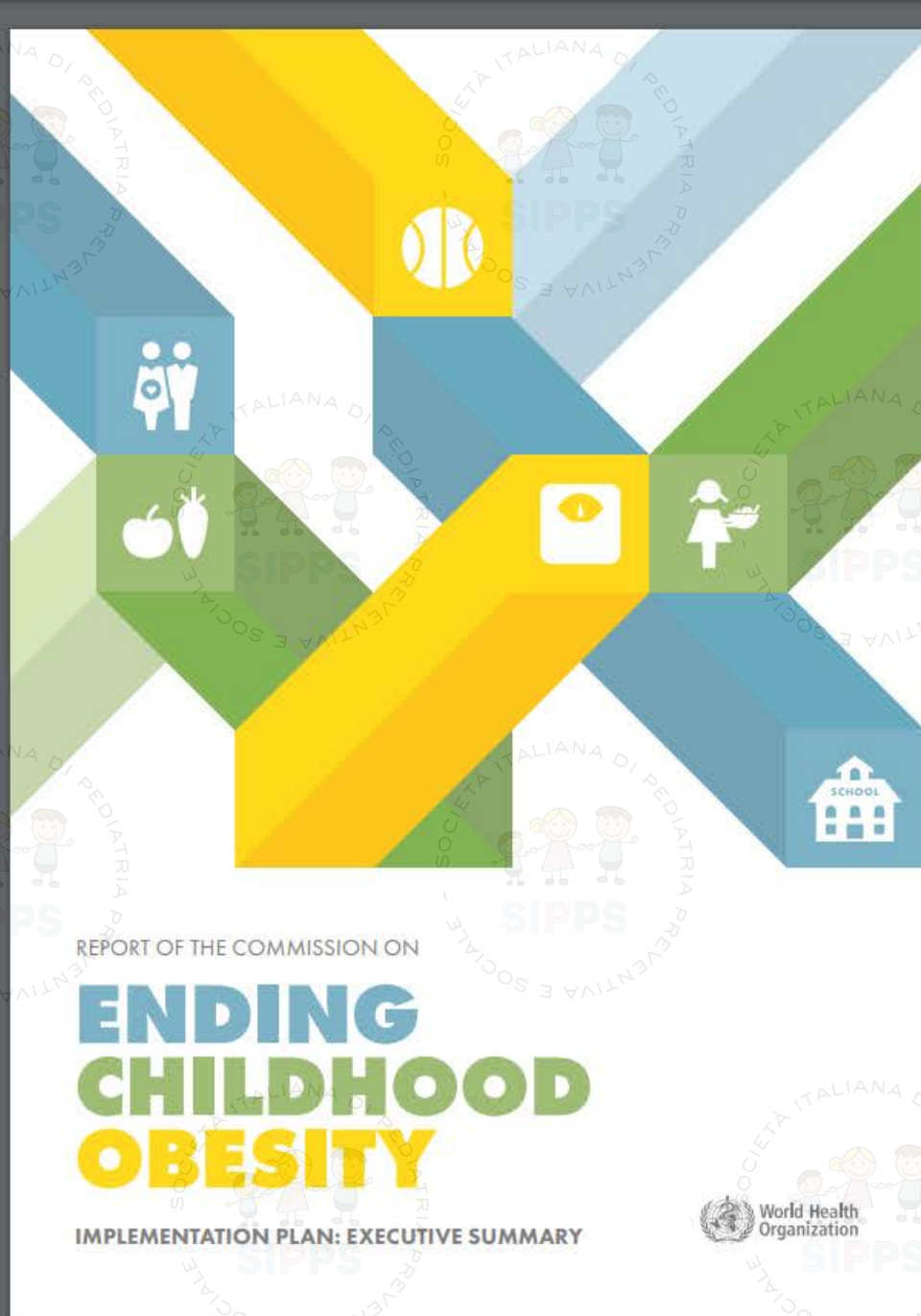
Values include

- Requirements: minimum required intake to prevent deficiency
- Safe upper levels of intake (ULs)

Uses

- Assessment of adequacy and safety of micronutrient intakes
- Establishing food-based dietary guidelines
- Planning feeding programmes
- Fortification of complementary foods
- Product labelling (incl. Codex – CCNFSDU)





# Childhood obesity epidemic

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- 11M obese children 5-19 (1975) → 124M (2016) (>2SD)
- Commission on Ending Childhood Obesity (ECHO)
  - 4.5: regulations on the marketing of complementary foods and beverages
  - 4.6: guidance on sugar-sweetened milks, fruit juices or energy-dense foods
  - 4.7: encourage consumption of a wide variety of healthy foods
  - 4.8: guidance to caregivers on appropriate nutrition, diet and portion size
  - 4.9: healthy foods, beverages and snacks are served in formal child-care settings



# CHANGING MARKET OF COMMERCIAL PRODUCTS (Euromonitor analysis 2015 in Latin America & Europe)

- High reliance on commercial complementary foods in some countries (over \$500/child in Norway, Sweden and Italy)
- Over 7% annual growth rate projected in Venezuela, Peru, and Norway
- Health claims are common
- Social media heavily used
- Many products are sweet, mask vegetable and other flavours with fruit and are puréed
- some have high sodium and added and total-sugar content and fatty acids profile may not be consistent with dietary and nutrient guidelines



# Proposed provisions for Commercially Available Complementary foods and nutritional composition

## Not to market for children <36 months

- Confectionery and sweet snacks
- Fruit drinks and juices and sweetened cows' milk/milk alternatives
- Savoury snacks and finger foods with greater than 15% energy from total sugars



## Nutrient content of CACFs

- Added sugars and other sweetening agents should not be used
- A threshold allowing only a limited amount ( $\leq 5\%$  by weight) of processed or concentrated 100% fruit (whole fruit that is puréed or dried) to be used as ingredients
- minimum energy density threshold of 60 kcal/100 g is required for some soft-wet spoonable foods
- limiting sodium content to 50 mg/100 kcal and 50 mg/100 g for all foods except cheese purées and meals
- Total fat should not exceed 4.5 g/100 kcal

# CONCLUSIONS

- Guiding principles substantially confirmed
- Consider the risk of chronic diseases – SSB and unhealthy foods
- Animal source foods should be consumed. Quantities to be consumed are quite small and do not pose a significant threat to the environment
- Revision of guiding principles expected in the first semester of 2023
- Need to focus on implementation of recommendations
- Commercially available complementary foods may have often high sodium and added and total-sugar content and fatty acids profile may not be consistent with dietary and nutrient guidelines



Thank you





# AMOUNT OF FOOD - Ensure that energy needs are met

130 kcal per day at 6-8 months of age, 310 kcal per day at 9-11 months of age, and 580 kcal per day at 12-23 months of age



600 kcal per day at 6-8 months of age, 700 kcal per day at 9-11 months of age, and 900 kcal per day at 12-23 months of age





# MEAL FREQUENCY AND ENERGY DENSITY - Increase the number of times that the child is fed complementary foods as he/she gets older.

2-3 times per day at 6-8 months of age

3-4 times per day at 9-24 months of age.



4-5 times per day



The appropriate number of feedings depends on the energy density of the local foods and the usual amounts consumed.

Additional nutritious snacks may be offered 1-2 times per day, as desired.

# NUTRIENT CONTENT - Feed a variety of foods to ensure that nutrient needs are met

Meat, poultry, fish or eggs should be eaten daily, or as often as possible.

Vegetarian diets cannot meet nutrient needs at this age unless nutrient supplements or fortified products are used.

Vitamin A-rich fruits and vegetables should be eaten daily.

Provide diets with adequate fat content.



- If adequate amounts of other ASF are consumed regularly, ~200-400 mL/d milk; otherwise ~300-500 mL/d milk.
- If dairy products are not consumed in adequate amounts, compensate calcium intake with small fish that include the bones or lime-treated maize tortillas, soybeans, cabbage, carrots, squash, papaya, dark green leafy vegetables, guava and pumpkin
- If animal source foods are not consumed regularly, 10-20 g of added fats or oils are needed unless a fat-rich food is given



Avoid giving drinks with low nutrient value, such as tea, coffee and sugary drinks such as soda. Limit the amount of juice offered so as to avoid displacing more nutrient rich foods.

# VITAMIN-MINERAL SUPPLEMENTS OR FORTIFIED PRODUCTS FOR INFANT (AND MOTHER)

- Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed.
- Breastfeeding mothers may also need vitamin-mineral supplements or fortified products, both for their own health and to ensure normal concentrations of certain nutrients (particularly vitamins) in their breast milk.



- Use fortified foods or vitamin-mineral supplements (preferably mixed with or fed with food) that contain iron (8-10 mg/d at 6-12 months, 5-7 mg/d at 12-24 months), as needed
- If adequate amounts of ASF are not consumed, fortified foods or supplements should also contain zinc, calcium and vitamin B12
- In countries where vitamin A deficiency is prevalent or where the underfive mortality rate is over 50 per 1000, children 6-24 months old should receive a high-dose vitamin A supplement (100,000 IU once for 6-12 months old and 200,000 IU bi-annually for 12-23 months old)





# FLUID NEEDS



- Non-breastfed infants and young children need at least 400-600 mL/d of extra fluids in a temperate climate, and 800-1200 mL/d in a hot climate.
- Plain, clean (boiled, if necessary) water should be offered several times per day to ensure that the infant's thirst is satisfied.



# PRACTICE RESPONSIVE FEEDING



- feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues;
- feed slowly and patiently, and encourage children to eat, but do not force them;
- if children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement;
- minimize distractions during meals if the child loses interest easily;
- remember that feeding times are periods of learning and love - talk to children during feeding, with eye to eye contact.

# GRADUALLY INCREASE FOOD CONSISTENCY AND VARIETY AS THE INFANT GETS OLDER, ADAPTING TO THE INFANT'S REQUIREMENTS AND ABILITIES



- 6 months - Infants can eat pureed, mashed and semi-solid foods.
- 8 months - most infants can also eat “finger foods” (snacks that can be eaten by children alone).
- 12 months - most children can eat the same types of foods as consumed by the rest of the family
- Avoid foods in a form that may cause choking



# PREPARE AND STORE COMPLEMENTARY FOODS SAFELY



- wash caregivers' and children's hands before food preparation and eating
- store foods safely and serving foods immediately after preparation
- use clean utensils to prepare and serve food
- use clean cups and bowls when feeding children
- avoid the use of feeding bottles, which are difficult to keep clean

# FEEDING DURING/AFTER ILLNESS



- Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give food more often than usual and encourage the child to eat more.

# IYCF Indicators

## Diets and feeding practices of infants and young children

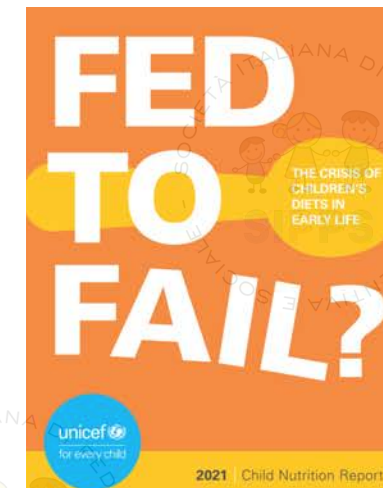
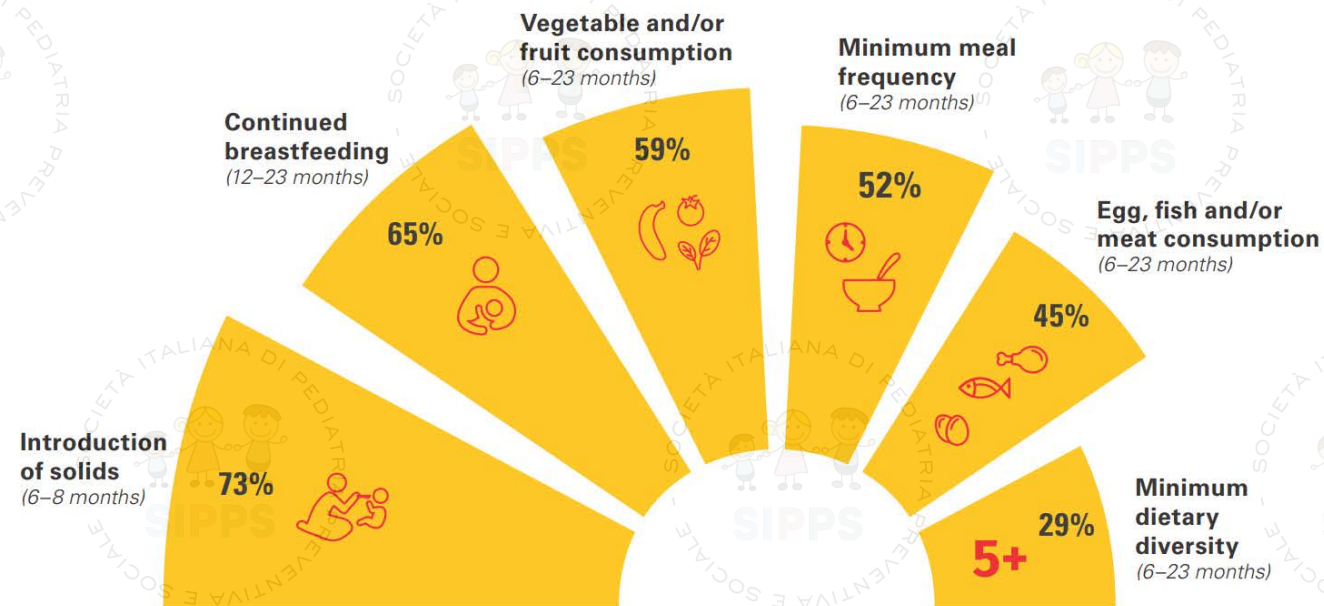


FIGURE 7

**Percentage of children receiving: solid foods; continued breastfeeding; minimum meal frequency; minimum dietary diversity; eggs, fish and/or meat; and vegetables and/or fruits, 2020**

Source: UNICEF global databases, 2021, based on Multiple Indicator Cluster Surveys (MICS), Demographic and Health Surveys (DHS) and other nationally representative sources.