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COMPLEMENTARY FEEDING

Definition

Complementary feeding, (CF) defined as the process of providing foods in addition to milk when breast milk or milk formula alone are no longer adequate to meet nutritional requirements, generally starts at age of 6 completed months and continues until 2 years of age, although breastfeeding may be continued beyond this period. (WHO 2023). Usual feeding consists of solid foods from family pot. The child is taught to eat with love and patience.

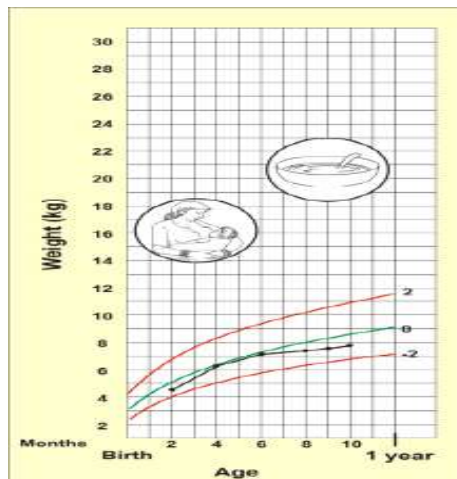


Fig 1: Age of growth faltering

- **Start at 6 completed months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding**
- **The purpose is to fill the energy gap and nutrients gap**

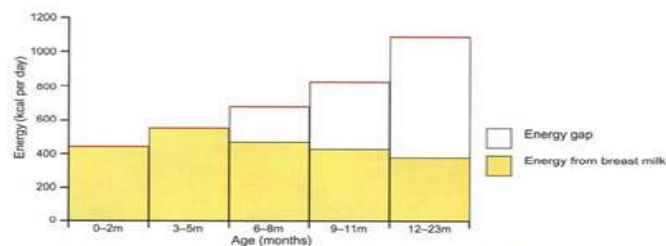


Fig 2: Energy Requirement and availability from Breast milk

WHO/NHD100.1 WHO/FCWCAH/OO.6.

https://iris.who.int/bitstream/handle/10665/66389/WHO_NHD_00.1.pdf?sequence=1

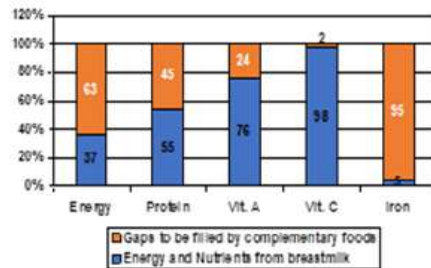


Fig 3: Energy, Protein and Nutrient gap
 Dadhich JP, Breastfeeding, Nutrition Section. IAP Textbook of Pediatrics 2016.
 eds. Parthasarthy A, Menon PSN, Nair MKC. Jaypee Brothers Medical Publishers (P) Ltd.

Challenges

Some challenges to CF at 6 months of age are (**4T's**) :

Teeth: No teeth to chew the food

Taste: Not familiar with the food taste

Tongue movements: Baby moves tongue in a manner to swallow liquid. In the process solids are “spit” out. This is often perceived as ‘not liking the food’,

Texture of food: Too thin food is swallowed as liquid, too thick is difficult to swallow as baby is unable to chew food’.

These challenges should be met by providing appropriate food and technique of feeding.

Principles

1. Exclusive breastfeeding from birth to 6 months of age. Continue to Breastfeed till 2 years of age. Introduce complementary foods at 6 completed months of age
2. CF should be responsive feeding applying the principles of psychosocial care



Fig 4: Responsive Feeding
<https://ncfimagetbank.org/nutrition-topics/responsive-feeding>



- 3 Good hygiene while preparing and feeding
- 4 At 6 months, start with small amounts of food and increase the quantity as the child accepts and gets older. Choose local food, culturally acceptable items that are easily available, affordable and easily digestible.
- 5 Increase food thickness from puree to finger food and ultimately family food as the infant grows older. Take likes and dislikes of child in to account while preparing food.
- 6 Gradually increase the number of times that the child is fed in a day.
- 7 Feed a variety of nutrient-rich, different color food items to ensure balanced diet and adequacy of mineral and vitamins.
- 8 Use vitamin-mineral supplements for the infant as required, under medical supervision. Iron supplements should be given to all babies starting 4-6 months and earlier for preterm babies.
- 9 During illness, more frequent breastfeed and encourage the child to eat soft, favorite food and water. After illness, increase the frequency of CF one or two times more than usual and encourage the child to eat more.
- 10 No extra salt to be added in first 12 months and no extra sugar in first 2 years.

Appropriate Food Items

Acronym “**HAD FOOD**” may be used to describe characteristics of complementary feeding.

H= Hygiene. Cleanliness and hygiene is extremely important in the preparation and storage of the complementary foods to prevent infection.

A= Active and responsive feeding.

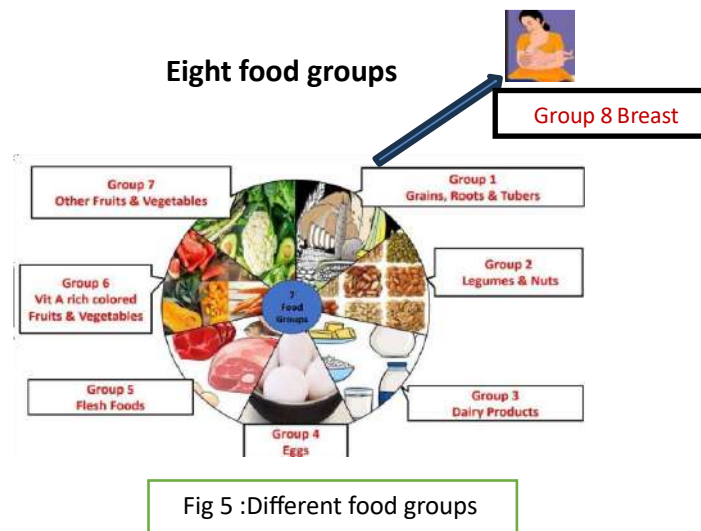
D= Daily feeding, uninterrupted, even during illness

F= Frequency of complementary feeding. It is age dependent and varies from 3-5 times a day with three meals and two snacks along with breastfeeding after one year of age.

O= Optimal Amount of complementary foods. Mother/care giver is trained to use bowl which is of 250 ml volume. Depending upon age infant is fed increasing amount of food starting from 1/3rd bowl, 1/2 bowl, 2/3 bowl to full bowl at a time. Snacks and breastfeeding are extra.

O= Optimal Texture/thickness/consistency according to age - Thick, meshed, pureed food that stays on the spoon nourishes the child. Thin and dripping food does not provide sufficient amount of energy and nutrients and fill the infant's stomach.

D= Different Food Groups. Foods from at least five of the food groups should be given every day. All groups should be given over a period of time, to meet the requirement of energy, protein, vitamins and minerals.



Food groups

- Breast milk
- Grains, roots and tubers
- Legumes and nuts
- Dairy products (milk, yogurt, cheese)
- Flesh foods (meat, fish, poultry, liver or other organs)

- Eggs;
- Vitamin A-rich fruits and vegetables;
- Other fruits and vegetables

Following four figures show the food items that can be exchanged within the group to create variety in a baby's meals.



Fig 6: Pulses and Beans of different types can be exchanged to create variety

A User guide to complementary feeding & sample recipes for children aged 6-24 months.
<https://www.unicef.org/myanmar/reports/user-guide-complementary-feeding-sample-recipes-children-aged-6-24-months>



Fig 7: Fruits and Vegetables of different types can be exchanged to create variety. Locally available fruits and vegetables, not shown here can be used.

A User guide to complementary feeding & sample recipes for children aged 6-24 months.
<https://www.unicef.org/myanmar/reports/user-guide-complementary-feeding-sample-recipes-children-aged-6-24-months>



Fig 8: Modified from - A User guide to complementary feeding & sample recipes for children aged 6-24 months.
<https://www.unicef.org/myanmar/reports/user-guide-complementary-feeding-sample-recipes-children-aged-6-24-months>



Fig 9: Modified from - A User guide to complementary feeding & sample recipes for children aged 6-24 months.
<https://www.unicef.org/myanmar/reports/user-guide-complementary-feeding-sample-recipes-children-aged-6-24-months>

Interchangeability among different food groups is shown in pictures above.

Food Items to avoid during CF and later

- Biscuits, breads, pastry, chocolates, cheese, softy, ice cream, doughnuts, cakes, etc.
- Tinned foods, packaged or stored foods, artificially cooked foods with preservatives or chemicals



Figure 10: Food Items to avoid during complementary feeding

- Fruit juices and fruit drinks
- Commercial breakfast cereals
- Repeatedly fried foods containing trans-fatty-acids (which predispose to obesity, diabetes, atherosclerosis, cardiac, and neurological problems in future)
- Any food containing HFSS- (high in fat, salt and sugar)

Consistency of food at the beginning of Complementary Feeding



Fig 11: Viscosity of the food should be such that it holds on to spoon and does not drip as too thin porridge is not able to provide sufficient nutrients

WHO/NHD100.1 WHO/FCWCAH/OO.6.

https://iris.who.int/bitstream/handle/10665/66389/WHO_NHD_00.1.pdf?sequence=1

How to enhance the nutritive value of complementary foods?

Nutritive value of foods can be improved by increasing the energy density of food by addition of ghee, sugar, jaggery, vegetable oils, butter, etc. in optimal quantity.

The protein content of foods can be improved by combining cereals and pulses to ensure delivery of all essential proteins compensating for limiting amino acids. Different cooking methods such as milling, germination, and fermentation of different food items also increase protein content by making food easily digestible.

The viscosity of foods can be reduced by *malting* so that a child can eat more. It is the process of germinating whole grain, and then the germinated cereal or pulse is dried and grinded. Malted cereal or pulse-mixed infant foods provides more energy. Amylase-rich flour (ARF) or flours of malted foods increases the energy density of food.

Feed with thick but smooth mixtures to begin with and gradually make it granular. Thin gruels do not provide enough energy.

Dietary Diversity

Preparation of a balanced diet requires knowledge of different food groups to exchange the food items appropriately. Following table provides the examples of some commonly used food item in CF.

It is desirable to have minimum 5 food groups in daily diet of child. Some photographs of the food items from the groups that can be exchanges are shown above in Figure 6-9 and in Fig 12.

Examples of Food groups for Dietary Diversity

Recommended food group	Examples/Variety of foods in different groups
Grains, roots, and tubers	Rice, wheat, maize, jowar, ragi, potato, sweet-potato, etc.
Legumes and nuts	Pulses, nuts, oil-seeds, dry fruits
Vitamin-Rich fruits and vegetables	Orange/yellow/green vegetables or fruits such as mango, carrot, papaya, and tomato
Other fruits and vegetables	Locally available, fresh fruits and vegetables, preferably seasonal and inexpensive
Dairy products	Milk, curd, yogurt, butter, and paneer
Eggs	Eggs
Flesh foods	Meat, fish, poultry, and organ meats


Fig 12: IAP Parental Guideline Complementary Feeding
<https://iapindia.org/pdf/Ch-040-IAP-Parental-Guideline-Complementary-Feeding.pdf>

Starting complementary Feeding (CF)

CF has to start slowly. Head holding and ability to sit with support are the developmental milestones that indicate readiness for CF. However, in babies with global developmental delay, swallowing needs to be assessed.

Introduce one food item at a time. Preferably repeat same item for a day or two. This allows us to assess the acceptability and identifies and avoids chances of severe food allergy (if any). WHO recommends 2-3 feeds between 6-8 months. However, 3 feeds should not be started on D1. Gradually, over a period of months, increase the number of food items and frequency to 2-3 feeds a day, depending on the adequacy of breast milk.

GUIDELINES FOR PARENTS
Complementary Feeding: Feeding of an Infant Beyond 6 Months Age
QUANTITY, FREQUENCY, AND TEXTURE OF COMPLEMENTARY FOODS.



Amounts of Food to offer			
Age	Texture	Frequency	Average amount of each meal
6-8 months	Begin with mashed foods or thick porridges	Daily 2-3 meals along with frequent breastfeeding	In the beginning, 2-3 tablespoon-full
9-11 months	Mashed foods, finely chopped, and foods that can be picked up by baby	Daily 3 meals with continued breastfeeding plus offer 1-2 additional snacks	1/2 cup/bowl (125 mL)
1-2 years	Staple family foods, mashed or chopped (if required)	Daily 3-4 meals with continued breastfeeding plus 1-2 additional snacks	3/4 to one cup/bowl (250 mL)

Fig 13: IAP Parental Guideline Complementary Feeding
<https://iapindia.org/pdf/Ch-040-IAP-Parental-Guideline-Complementary-Feeding.pdf>



Facts and Myths about Food Items

Myths related to Hot and Cold food

The myth	Remarks
Jaggery, spicy food, mutton, chicken, papaya, eggs, brinjal, beet root, and mangoes are considered "hot" for the child.	False... In fact, children require all these items in their feeds to provide different nutrients.
Banana, curd/butter milk, ice-creams, lemon juice, guava, and other citrus fruits are "cold" for the child.	False... This is a wrong belief and these food items are essential for children in their diet.
Eggs and nonvegetarian foods are sometimes considered as "harmful" to the child.	False... Animal origin foods are special foods for children and are nutritious. But, these are not must and nutritional needs of children can be easily met by vegetarian diets, containing a variety of food items.
Ghee is heavy to digest, causes cough	False... Small amount of fats can be added to food to increase their energy content.
Wheat/daliya/suji is heavy.	False
Maggi/biscuits/marketted foods help in weight gain.	False

Fig 14: IAP Parental Guideline Complementary Feeding
<https://iapindia.org/pdf/Ch-040-IAP-Parental-Guideline-Complementary-Feeding.pdf>

There are many other myths and misconceptions related to nutritious food such as:

Myth: The locally available, cheap, and seasonal fruits are not good. Costly and imported fruits from other countries stored or preserved in cold storage have superior health benefits. Fruit juices are preferred and considered more nutritious over the whole fruit.

Fact: We must understand that the tinned or preserved juices contain chemicals or preservatives and may be dangerous.

Myth: Health drinks, supplements, and protein powders with “*exaggerated claims*” are more nutritious, enriched with vitamins, minerals, and micronutrients.

Fact: Claims are exaggerated. Many health drinks have high concentration of sugar that may be harmful.

Myth: Any products or foods promoted by celebrities must be good. The biased, unscientific, and misguided advertisement is neglected even by techno-savvy and highly educated individuals.

Fact: We must remember that celebrities promote as they are paid, not on the basis of merit of item.

Myth: The ultra-processed, attractively packed, costly, and cold-storage preserved food promoted by big companies is “*magic foods*”.

Fact: Food are prepared from same basic item and have similar nutritional value. They may have high sugar or fat content which may be harmful. That is why they are classified as “JUNCS”

Myth: Many of us have misconception that the artificially prepared, flavored, and attractively packaged commercial foods are innovative food for our children.

Fact: We must remember that we are living in “*JUNCS food filled world*” where the artificial food with lots of chemicals and preservatives are promoted over locally available, low cost, and fresh and clean natural and nutritious food.

Role of commercially available food items for feeding infants

There is no role of commercially available “Infant cereals” in CF. Many commercial foods are available in market for feeding infants. They are expensive, and often have tall and exaggerated health claims but are not healthier than freshly prepared home food and therefore are not suitable option for feeding children. As far as possible, child’s food should be prepared at home using commonly available ingredients.

Don’ts in CF

- Delay in starting complementary feeding.
- Outside, artificial, packaged, and commercial and *Junk foods or JUNCS*.
- Foods with excess of sugar, salt, and trans-fatty acids.
- *Ultra-processed and refined foods*.
- *Bottle-feeding*
- Use of Screen while feeding.



- Force feed. Feeding should not be an unpleasant experience.
- Foods that may cause choking.

Low birth-weight babies

CF in LBW babies should be started at the chronological age in the same manner as in term appropriate gestational age babies.

Complementary feeding in a sick child

Feeding sick child is a challenge. On one side the requirement especially of calories (Carbohydrates) in particular increase, on other hand child is not willing to accept food and /or milk. Feeding a sick child requires lot of patience. Continue breastfeeding with increased frequency as baby may not accept full feed at a time. Offer small amount of food, more frequently than usual. Offer food that the child likes. Increase variety of food.

Resource for Recipes

There a document prepared by ministry of Women and Child Development titled “Nutritious Recipes for complementary feeding of infants and young children”, available on internet. It can be accessed to choose culturally acceptable and affordable recipes.

[Nutritious Recipes for complementary feeding of infants and young children.](https://wcd.nic.in/sites/default/files/Nutritious%2BRecipes%2BEnglish%2BFinal.pdf)
<https://wcd.nic.in/sites/default/files/Nutritious%2BRecipes%2BEnglish%2BFinal.pdf>

Key Messages

1. Breastfeeding for two years age helps the child to grow strong and healthy.
2. Children who start complementary feeding at 6 months grow better.
3. Family food with thick consistency that stays on spoon, nourish and fill the child.
4. Animal foods are special foods for children.
5. Legumes, peas, beans, lentils and nuts are good source of proteins, minerals and vitamins.
6. Vitamin C rich foods (amla, lemon, tomato, tamarind) are necessary for iron absorption.
7. Dark green vegetables and orange and yellow colored fruits help children to keep eyes healthy and prevent vitamin deficiency and infections.
8. Child is learning to eat, help him with patience.
9. Encourage the child to eat and drink during illness. Offer food and fluids more frequently
10. Provide extra food during recovery to reduce the risk of growth faltering and mal nutrition.

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PRESS NOTE

Mother's milk is best food for babies till 6 months age(Complete food) .The process of introduction of home made nutritious semisolid foods to complement breastfeeding is called as "Complementary feeding". In spite of starting complementary feeding ,breastfeeding is required to be continued till 2years.

Malnutrition is one of the largest cause of under 5 child deaths.

Appropriate complementary feeding advice is one of the most cost effective method to reduce rates of malnutrition in children in our country.

The essential criterion for appropriate complementary feeding are:

1. Good hygiene and cleanliness while preparing and feeding.
2. Do not try to force feed the baby. It should be done in a playful manner
3. After completing first 6 months, start with small amounts of food and increase the quantity as the child accepts and gets older. Increase the number of times that the child is fed, gradually. Usually baby should be eating 3-5 times a day with three meals and two snacks along with breastfeeding after one year of age.
4. Choose local food items that are easily available, affordable and easily digestible
5. Increase food thickness from puree to finger food and ultimately family food as the infant grows older. Take likes and dislikes of child in to account while preparing food.
6. Feed a variety of nutrient-rich, different color food items to ensure balanced diet and adequacy of mineral and vitamins.
7. During illness, more frequent breastfeed and encourage the child to eat soft, favorite food and water.
8. Thick, mashed, pureed food that stays on the spoon nourishes the child. Thin and dripping food does not provide sufficient amount of energy and nutrients and fill the infant's stomach.

9. The following should be avoided during complementary feeding (HFSS: High fat, sugar , salt): Biscuits, breads, pastry, chocolates, cheese, softy, ice cream, doughnuts, cakes, tinned foods, packaged or stored foods, artificially cooked foods with preservatives or chemicals, fruit juices and fruit drinks

Indian Academy of Pediatrics (IAP) through its 45000 members spread in all parts of the country ensures that every parent is given proper guidance and advice regarding complementary feeding during their visits.

FAQ s

What is complementary feeding?

Complementary feeding, (CF) is a way of giving solid foods in addition to milk when breast milk is no longer adequate to meet nutritional requirements, it starts at completed 6 months and continues until 24 months of age, Usual feeding consists of solid foods from family pot. The child is taught to eat with love and patience

When to start complementary feeding

After the age of 6 months, breastmilk alone is no longer sufficient to provide adequate nutrition to the child, and complementary feeding must begin soon after completing 6 months of age I.e, at 180 days.

Why at 6 months?

It also coincides with the peak period for risk of growth faltering and nutrient deficiencies .The reasons for complementary feeding at 6 months of age are: baby is developmental ready with good head control ,can sit and digestive enzymes to digest food

What happens if we give late?

If CF is started too late it will :

- The energy and nutrient gap is not filled and growth and development slows down or stops
- Risk of deficiencies and malnutrition
- Increase risk of ill health
- Critical period after which the infant may always be a poor chewer and may be poor in eating solids later

I have to join work by the time baby is 4 months .i hope I can start feeding the baby solids by that time?

If CF is started too early it will take the place of breast milk; Result in a low nutrient diet; Increasing risk of illness (as Less protective factors, Other foods not as clean; Difficult to digest foods) and Increase mother's risk of pregnancy

Which foods should be used for complementary feeding?

Appropriate combination of cereals and pulses (Khichdi, Dal rice, etc.), locally available staple foods such as idli, dosa, dhokla, ragi, chapati, roti, paratha with oil/ ghee,

Mashed banana, other pulpy fruits (e.g., mango, papaya), sweet potato, and potato. Sprouts, pulses, legumes, groundnuts, almonds, cashew nuts, raisins

Are there any foods to be avoided?

- Avoidable Biscuits, breads, pastry, chocolates, cheese, softy, ice cream, doughnuts, cakes, etc.
- Tinned foods, packaged or stored foods, artificially cooked foods with preservatives or chemicals
- Fruit juices and fruit drink
- Commercial breakfast cereals
- Repeatedly fried foods containing trans-fattyacids (which predispose to obesity, diabetes, atherosclerosis, cardiac, and neurological problems in future
- Any food containing HFSS- (high in fat, salt and sugar)

Should we take any precautions while preparing food for complementary feeding?

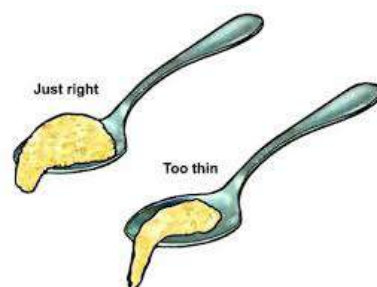
Yes

- Follow clean hands, clean vessels, clean storage, clean cups and plates to feed.
- Avoid using feeding bottle. Food that looks fresh and smells good shall be offered.
- The perishable foods (meat, milk, etc.) and prepared food shall be stored in a refrigerator.
- Cover the food properly and feed to the child within 2 hours if refrigerator is not available..

Can I give my baby water?

A: After 6 months of age, you can offer small amounts of water in a sippy cup, but breast milk should still be the primary source of hydration

What is the right consistency to begin with?



What foods should I introduce first?

Start with single-ingredient, iron-rich foods like pureed meats, iron-fortified cereals, or mashed fruits and vegetables.

How should I introduce new foods?

Introduce one new food at a time and wait a few days before introducing another. This helps to monitor for any potential allergies or sensitivities.

My baby doesn't eat any food when she is sick, what should I do?

During illness, the principle of more fluids including frequent breastfeeding and encouragement to eat soft, favorite foods should be followed. After illness, promote feeding more often than usual so as to replenish the deficient intake.

I think babies cant chew food and need to mashed by grinder and given as thin paste.

Is it right?

No, the biting movement of jaw appears around 5 months. Around 6–7 months, swallowing of solid foods occurs.

The side-to-side movement of tongue develops by 8–12 months, so they can take different textures as the age advances.

Also its critical to introduce different texture foods in different ages otherwise they will have difficulty to learn to chew or swallow

So how often to give food and how much is the quantity and what consistency?

Quantity and frequency depends on age and its given in below table.

Why to use word complementary feeding than weaning?

Weaning is perceived by many mothers as stopping of breast feeding.

What is the percentage in our country in introducing appropriate complementary foods at 6 months?

42.7%

What should be the frequency? extra energy addition to breast feeding?

6-8 months----2-3 times a day (200 kcal)

9-11 months----3-4 times a day(300 kcal)

12-24 months---4-5 times a day(550 kcal)

AMOUNTS OF FOOD TO OFFER

Age	Texture	Frequency	Amount of food an average child will usually eat at each meal ¹
6–8 months	Start with thick porridge, well-mashed foods Continue with mashed family foods	2–3 meals per day plus frequent breastfeeds Depending on the child's appetite, 1–2 snacks may be offered	Start with 2–3 tablespoonfuls per feed increasing gradually to $\frac{1}{2}$ of a 250 mL cup
9–11 months	Finely chopped or mashed foods, and foods that baby can pick up	3–4 meals plus breastfeeds Depending on the child's appetite, 1–2 snacks may be offered	$\frac{1}{2}$ of a 250 mL cup/bowl
12–23 months	Family foods, chopped or mashed if necessary	3–4 meals plus breastfeeds Depending on the child's appetite, 1–2 snacks may be offered	$\frac{3}{4}$ to one 250 mL cup/bowl
If the baby is not breastfed, give in addition: 1–2 cups of milk per day, and 1–2 extra meals per day.			

My baby eats very little quantity of food , how can I make it more nutritive?

- Increasing the energy density of food by addition of ghee, jaggery, vegetable oils, butter, etc.
- The protein content of foods can be improved by combining cereals and pulses to ensure delivery of all essential proteins, also
- By using different cooking methods such as milling, germination, and fermentation of different food items.
- Feed with thick but smooth mixtures
- The fortification of complementary foods with micronutrients such as iodine, zinc, iron, vitamin D, vitamin A, calcium, phosphorus, etc can be done

Cereals and pulses will give enough energy should I give vegetables and fruits in complementary feeding?

Fruits and vegetables provide minerals and vitamins and thus increases nutritive value of foods.

Green leafy vegetables, carrots, pumpkin, and seasonal fruits such as papaya, mango, chikoo, and banana are important sources of vitamin A, B, and iron.

Include seasonal, locally available, fresh, cheap, nutritious fruits, and vegetables

So when we give fruits should we boil it and give?

Fruits are preferably given in their natural form as one eats

My grand mother says that mangoes and eggs are “hot” foods and curd is “cold “ food.

Is there anything like hot or cold food?

There is no such concept in modern medicine.

This is a wrong belief and these food items are essential for children

How can I ensure my baby is getting enough nutrients?

When the diet contains five or more of the following food groups: the babies get all the required nutrients.

There are so many commercially available baby foods they say that it increases baby s IQ , I think my child will get best nutrition by that, do you agree doctor?

No ,They are expensive, and often have tall and exaggerated health claims.

Many a times, the ready-to-use food, artificial or packaged food are easily available but may not be a healthier or suitable option for feeding children.

As far as possible, child’s food should be prepared at home using commonly available ingredients.

Doctor I read in news paper that foods given in childhood has bearing with adult diseases, is it true?

Yes , very much true.

Lack of awareness of the nutritional quality of the foods, irrational beliefs about certain foods, and cultural taboos may lead to less food intake contributing to child being undernourished.

Many diseases of adults (e.g., heart disease, high blood pressure, and diabetes) are related to undernutrition in fetal life and early infancy

Can some foods cause allergy?

Some babies may be allergic to cow’s milk protein or/and soya protein.

The other foods to which some children may be allergic are: eggs, peanuts and some food additives, and spices.

Fortunately, these allergies are not very common in Indian children.

You should consult your pediatrician, if you feel that your child is allergic to a particular food.

Should I force my baby to eat if they refuse?

No, follow your baby's cues for hunger and fullness. If they refuse a food, try again another time. Forcing can create negative associations with food. Do not force to feed the child. This way the child starts disliking food and the process of feeding

The feeding times are periods of learning and love—hence, talk to children while feeding and maintain eye-to-eye contact.-**THIS IS CALLED RESPONSIVE FEEDING**

My child eats only if given mobile, is it ok?

The distractions such as viewing TV or mobile phone while feeding is strongly discouraged. Many food preparations may be refused by the child; hence, try different food combinations, with different tastes, textures and methods of encouragement

How can I ensure my baby's safety during feeding?

Always supervise your baby during feeding, use appropriate feeding utensils, and ensure food is at an appropriate temperature to prevent burns.

Tag lines

- Complement the growth with proper complementary feeds.
- Milk to meals : Guiding growth with care.
- Nurturing Little Tummies with mom made goodness
- Wholesome Starts, Healthy Hearts: Say Goodbye to Processed, Hello to Homemade
- From purees to pieces: navigating the texture adventure.
- From silky smooth to finger-friendly: savoring the spectrum of textures.
- From milk to munching: Complementary Feed paving the way
- "Nurturing Little Tummies with mom made yummys"
- "Messy Hands, Happy Hearts: Best way to start"



COMPLEMENTARY FEEDING



Complementary feeding for healthy development

Experts

Dr C R Banapurmath (Convenor)

Dr K Kesavulu

Dr Sudhir Mishra

Dr Nagalatha.S

Dr Aarti Kinikar

Dr Dinesh Tomar

What is complementary feeding?

Complementary feeding, (CF) defined as the process of providing foods in addition to milk when breast milk is no longer adequate to meet nutritional requirements, generally starts at the age of completed 6 months and continues until 24 months of age, although breastfeeding may be continued beyond this period

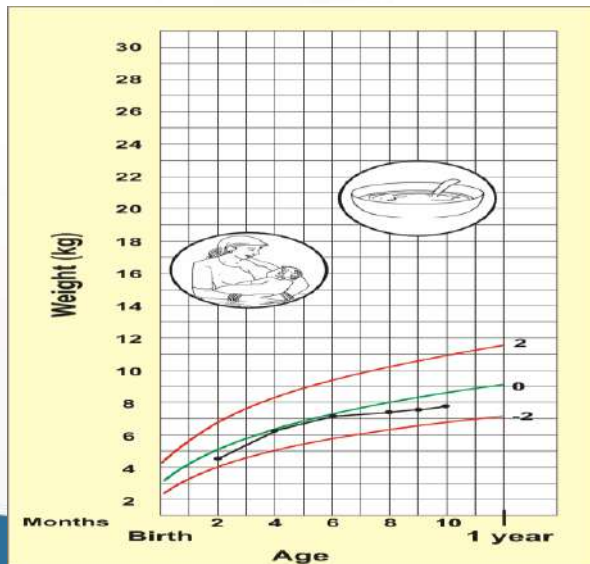


When to start complementary feeding

After the age of 6 months, breastmilk alone is no longer sufficient to provide adequate nutrition to the child, and complementary feeding must begin soon after **completing 6 months of age i.e, at 180 days.**

Why at 6 months?

This is a developmental period when it is critical for children to learn to accept healthy foods and beverages and establish long-term dietary patterns (WHO). It also coincides with the peak period for risk of growth faltering and nutrient deficiencies



Age of Growth Faltering

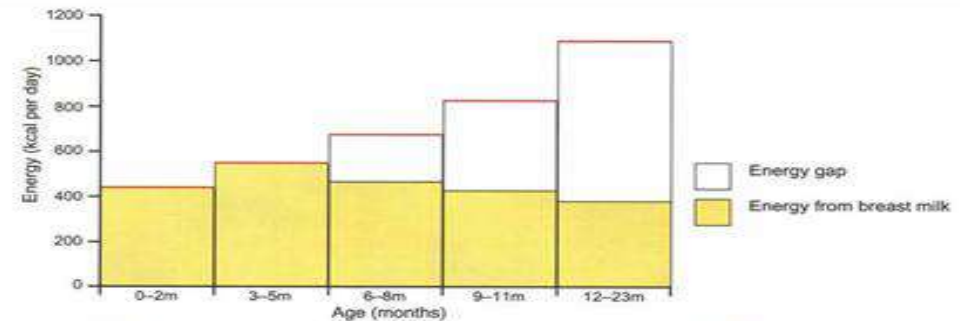


Fig 2: Energy Requirement and availability from Breast milk

WHO/NHD100.1 WHO/FCWCAH/OO.6.

https://iris.who.int/bitstream/handle/10665/66389/WHO_NHD_00.1.pdf?sequence=1

Energy Gap

The developmental factors.....

The other reasons for complementary feeding at 6 months of age are

- Child develops neck/head control and hand-to-mouth coordination.
- Child starts enjoying mouthing and biting.
- The intestines are mature and ready to digest pulses and cereals.
- Baby likes chewing and gumming semisolids as there is hardening of gums and eruption of teeth .
- Tendency to push solids out of mouth decreases



What happens if we give too early or too late?

If CF is started too early it will

- Take the place of breast milk
- Result in a low nutrient diet
- Increasing risk of illness
- Increase mother's risk of pregnancy

If CF is started too late it will

- The child does not receive nutrients needed
- Growth and development slows down or stops
- Risk of deficiencies and malnutrition

Role of breastfeeding after 6 months

- **Continue frequent on-demand breastfeeding until 2 years of age or beyond**
- Breastfeeding should continue with complementary feeding up to 2 years of age or beyond.

Breast milk can provide

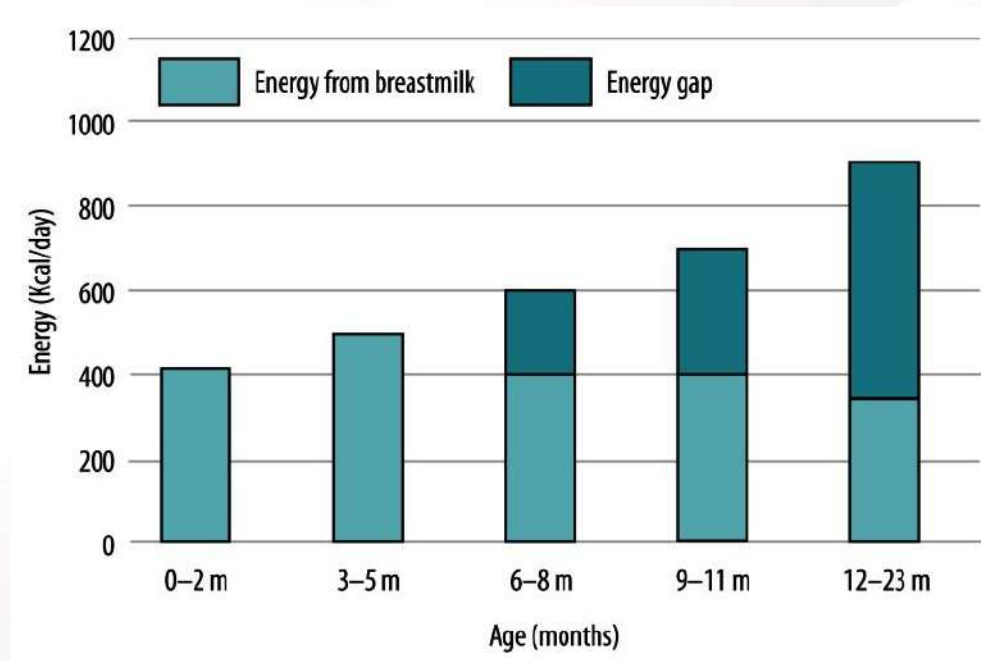
one half or more of a child's energy needs between 6 and 12 months of age

one third of energy needs and other high quality nutrients between 12 and 24 months .

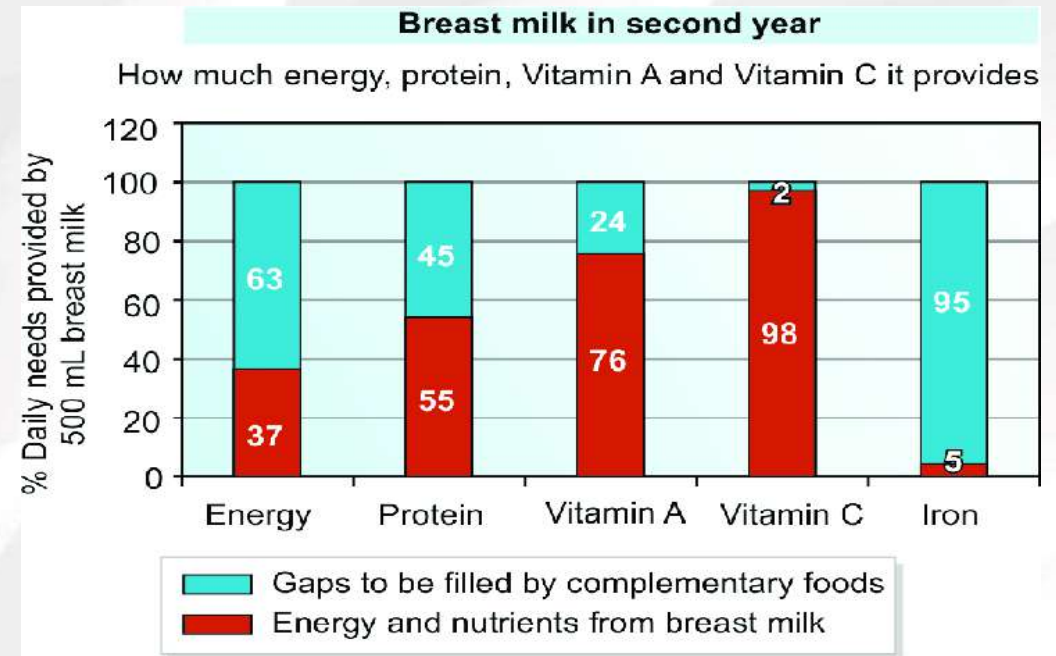


**COMPLEMENTARY FEEDING - FOODS TO FILL THE
NUTRIENT GAP- THE WHEN'S AND HOW'S**

- Start at 6 months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding
- The purpose is to fill the energy gap and nutrients gap



ENERGY GAP



NUTRIENT GAP

So to fill the gaps 2 things are to be followed

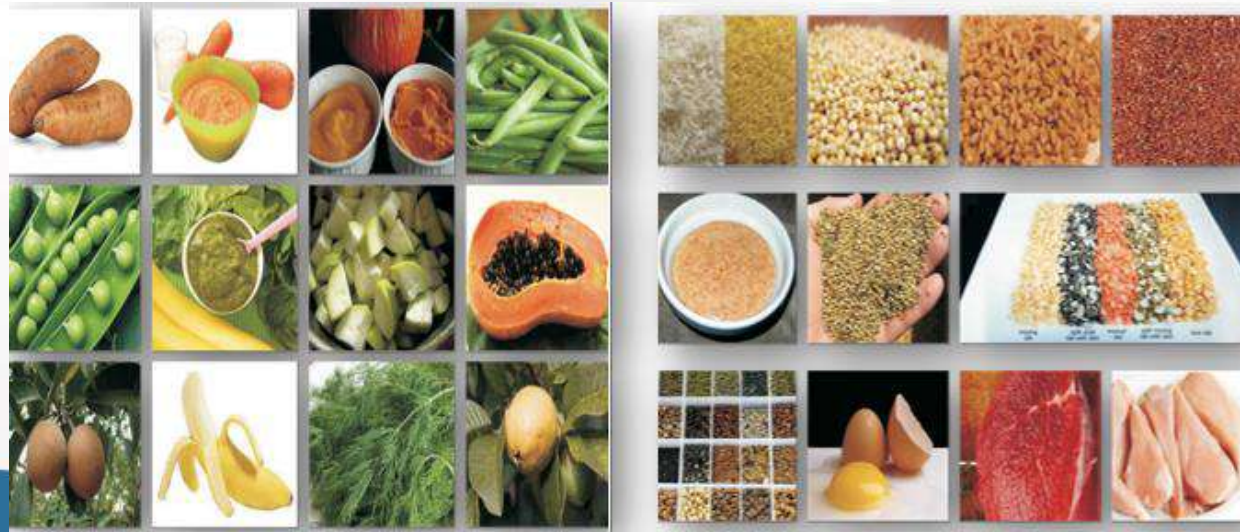
- Minimum Meal Frequency
- Minimum Dietary Diversity (MDD) is the consumption of five or more food groups from the seven food groups

Minimum Meal Frequency (6-24 months)

AGE	ENERGY NEEDED PER DAY IN ADDITION TO BREAST MILK	TEXTURE	FREQUENCY	AMOUNT OF FOOD AN AVERAGE CHILD WILL USUALLY EAT AT EACH MEAL ^a
6–8 months	200 kcal per day	Start with thick porridge, well mashed foods Continue with mashed family foods	2–3 meals per day Depending on the child's appetite, 1–2 snacks may be offered	Start with 2–3 tablespoonfuls per feed, increasing gradually to ½ of a 250 ml cup
9–11 months	300 kcal per day	Finely chopped or mashed foods, and foods that baby can pick up	3–4 meals per day Depending on the child's appetite, 1–2 snacks may be offered	½ of a 250 ml cup/bowl
12–23 months	550 kcal per day	Family foods, chopped or mashed if necessary	3–4 meals per day Depending on the child's appetite, 1–2 snacks may be offered	¾ to full 250 ml cup/bowl

How to fill the nutrient gap? What is dietary diversity?

Minimum dietary diversity (MDD) is consumption of five or more food groups from the eight food groups to meet daily energy and nutrient requirements.



Various Food Group

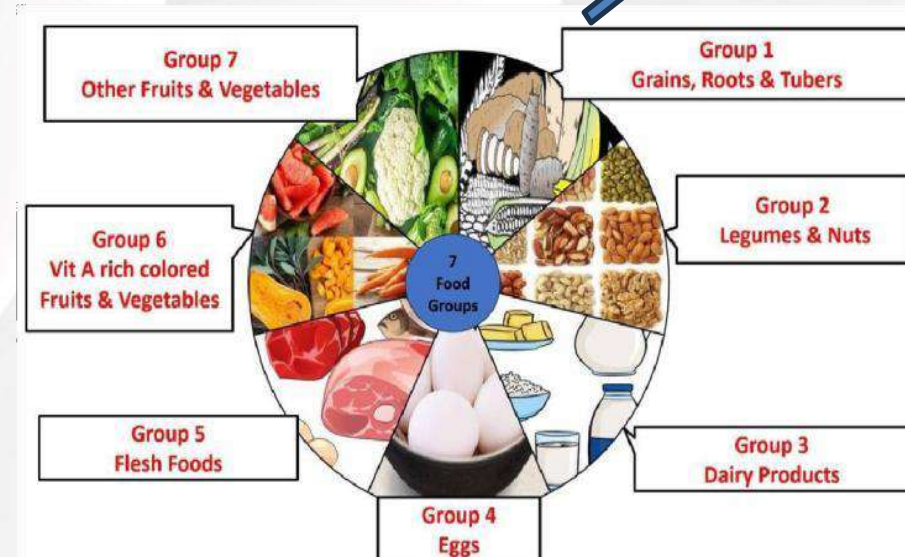
Recommended food group	Examples/Variety of foods in different groups
Grains, roots, and tubers	Rice, wheat, maize, jowar, ragi, potato, sweet-potato, etc.
Legumes and nuts Pulses	Pulses, nuts, oil-seeds, dry fruits
Vitamin-A rich fruits and vegetables	Orange/yellow/green vegetables or fruits such as mango, carrot, papaya, and tomato
Other fruits and vegetables	Locally available, fresh fruits and vegetables, preferably seasonal and inexpensive
Dairy products	Milk, curd, yogurt, butter, and paneer
Eggs	Eggs
Flesh foods	Meat, fish, poultry, and organ meats

8 Food groups

Eight food groups

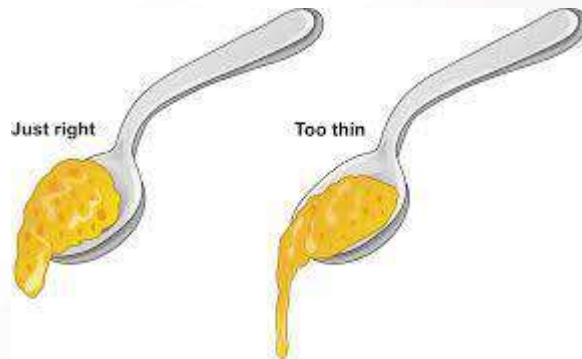


Group 8 Breast milk



Consistency of CF The questions to be answered?

What should be the consistency of food in complementary feeds?



Thickness of Feed- to begin with

Later Texture

and

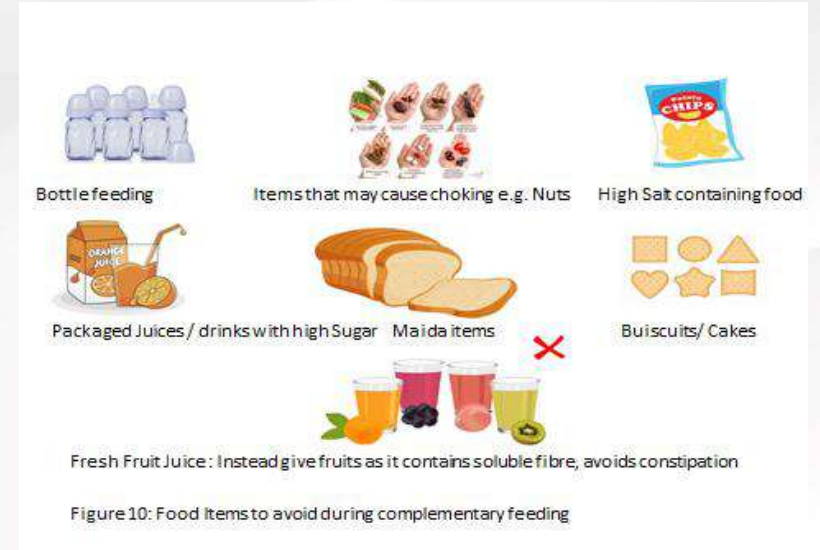
Consistency

Examples of some complementary foods

- Appropriate Combination of cereals and pulses (Khichdi, Dalrice, etc.), locally available staple foods such as Idli, Dosa, Dhokla, Ragi, Chapati, Roti, Paratha with oil/ ghee, and some amount of sugar.
- Mashed banana, other pulpy fruits (e.g., mango, papaya), sweet potato, and potato
- Milk-based cereals preparations
- Sprouts, pulses, legumes, groundnuts, almonds, cashewnuts, raisins

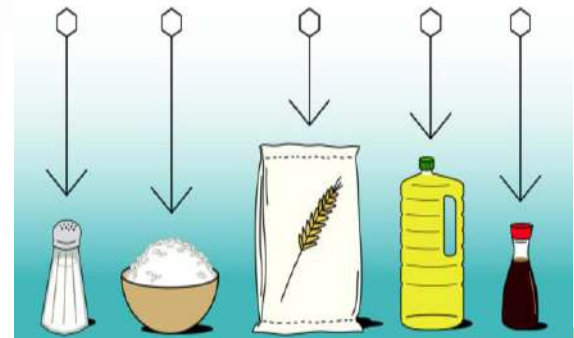
Avoidable foods

- Avoidable Biscuits, breads, pastry, chocolates, cheese, softy, ice cream, doughnuts, cakes, etc.
- Tinned foods, packaged or stored foods, artificially cooked foods with preservatives or chemicals
- Fruit juices and fruit drink
- Commercial breakfast cereals
- Repeatedly fried foods containing trans-fatty problems in future
- Any food containing HFSS- (high in fat, salt and sugar)



How to make CF more nutritive?

- Increasing the energy density of food by addition of ghee, jaggery, vegetable oils, butter, etc.
- By using different cooking methods such as milling, germination, and fermentation of different food items.
- The viscosity of foods can be reduced by malting so that a child can eat more
- Feed with thick but smooth mixtures
- Fortification iodine, zinc, iron, vitamin D, vitamin A, calcium, phosphorus,



Feeding techniques, Strategies

Optimal complementary feeding depends not only on what is fed but also on how, when, where and by whom a child is fed.

Practice responsive feeding so that the child enjoys the process of feeding



Responsive feeding in younger child

Suitable Feeding Situation-in bigger children

Precautions while preparing CF

Follow clean hands, clean vessels, clean storage, clean cups and plates to feed.

Avoid using feeding bottle. Food that looks fresh and smells good shall be offered.

The perishable foods (meat, milk, etc.) and prepared food shall be stored in a refrigerator.

Cover the food properly and feed to the child within 2 hours if refrigerator is not available..



Other important facts in complementary feeding

Role of commercial foods in complementary feeding

They are expensive, and often have tall and exaggerated health claims.

As far as possible, child's food should be prepared at home using commonly available ingredients.



Feeding during Illness feeding

Increase fluid intake during illness,
Including more frequent breastfeeding,
Encourage the child to eat soft, favourite foods.

Feeding after illness/Recovery:

- Feed **extra** meal
- Give **extra** amount
- Use **extra** rich foods
- Feed with **extra** patience
- Give **extra** breastfeeds as often as child wants

Feeding during illness



Less than 6 months		More than 6 months		At the time of mother's illness
				
During Illness Continue Breastfeeding	After Illness Increase breastfeeding	During Illness Continue Breastfeeding & complementary feeding	After Illness Continue Breastfeeding & Increase complementary feeding	During Illness Continue Breastfeeding and give complementary feeding

Don'ts in CF

- Avoid delay in starting complementary feeding.
- Avoid outside, artificial, packaged, and commercial and *foods or JUNCS*.
- Avoid foods with excess of sugar, salt, and trans-fatty acids.
- Avoid *ultra-processed* and *refined foods*.
- *Bottle-feeding* has only disadvantages; STOP IT.



Continue..

- Avoid feeding while watching television or mobile instead involve the baby in conversation.
- Do not force to feed. Feeding should not be an unpleasant experience.
- Avoid overfeeding.
- Avoid foods that may cause choking

Key Messages

1. Breastfeeding for two years age helps the child to grow strong and healthy.
2. Children who start complementary feeding at 6 months grow better.
3. Family food with thick consistency that stays on spoon, nourish and fill the child.
4. Animal origin food (milk and milk products for vegetarians) must be included in a child's diet.
5. Legumes, peas, beans, lentils and nuts are good source of proteins, minerals and vitamins.

Continued..

6. Multicolored fruits and vegetables help children to keep eyes healthy and prevent vitamin deficiency and infections.
7. A growing child needs frequent meals and snacks:give variety of foods
8. A growing child needs increasing amount of food
9. Young child need to learn to eat. Encourage patiently.
10. Encourage the child to eat and drink during illness. Offer food and fluids more frequently



THANK YOU



alamy

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Complementary Feeding (CF) - Key Points

Definition:

The process of providing foods in addition to milk when breast milk alone is no longer sufficient to meet a child's nutritional needs

Start Age:

Begins at 6 completed months of age

Duration:

Continues until 2 years of age

Feeding Approach:

The child is taught to eat with love and patience

Food Type:

Involves solid foods typically prepared for the family

Breastfeeding:

May continue beyond the complementary feeding period



Source: World Health Organization (WHO), 2023

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Challenges to Complementary Feeding at 6 Months of Age (4T's)



TEETH

No teeth to chew the food.



TASTE

Not familiar with the food taste.



TONGUE MOVEMENTS

Baby moves tongue in a manner to swallow liquid. In the process solids are spit out. This is often perceived as not liking the food.



TEXTURE OF FOOD

Too thin food is swallowed as liquid, too thick is difficult to swallow as baby is unable to chew food.



These challenges should be met by providing appropriate food and technique of feeding.



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Essential Guidelines for Successful Complementary Feeding



- ▶ **Hygiene:** Maintain good hygiene when preparing and feeding.
- ▶ **Initial Feeding:** Start with small amounts of food at 6 months and gradually increase quantity.
- ▶ **Food Selection:** Choose local, culturally acceptable, affordable, and easily digestible foods.
- ▶ **Food Consistency:** Progress from purees to finger foods and then family foods as the child grows.
- ▶ **Consider Preferences:** Account for the child's likes and dislikes.



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Principles of **Complementary Feeding**



Breastfeeding: Exclusively breastfeed from birth to 6 months. Continue breastfeeding until 2 years of age and beyond.



Introduction of Complementary Foods: Begin at 6 completed months.



Responsive Feeding: Apply principles of psychosocial care and responsive feeding.



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Discover **HAD FOOD**

Key Characteristics of Complementary Feeding



- H Hygiene**
Ensure cleanliness to prevent infections.
- A Active and Responsive Feeding**
Engage with the child during feeding.
- D Daily Feeding**
Maintain consistent feeding, even during illness.
- F Frequency**
Feed 3-5 times daily, with meals and snacks.
- O Optimal Amount**
Use a 250 ml bowl; increase food quantity with age (1/3 to full bowl).
- O Optimal Texture**
Provide thick, mashed, or pureed foods that stay on the spoon for better nutrition.
- D Different Food Groups**
Include foods from at least five groups daily to meet nutritional needs.



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Frequency and Quantity: Increase feeding frequency and quantity with age

6-9 months:

2-3 meals, 2/3 bowl (250ml)
each time.

9-12 months:

3 meals + 1 snack, 3/4
bowl (250ml) each time.

Beyond 12 months:

3 meals + 2 snacks, full bowl
(250ml) each time.



Nutrient Variety:

Feed a variety of nutrient-
rich, colorful foods for a
balanced diet.

Supplements:

Use vitamin-mineral
supplements as needed,
under medical supervision.
Start iron supplements at
4-6 months, earlier for preterm babies.



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During and After Illness



Increased Breastfeeding:

During illness,
breastfeed more
frequently.



Comfort Foods:

Encourage the child to
eat soft, favorite foods
and drink water.



Post-illness Feeding:

Increase the frequency of
complementary feeding by one
or two times more than usual
and encourage the child to
eat more.

Salt and Sugar



No Extra Salt:

Do not add extra salt in
the first 12 months.



No Extra Sugar:

Avoid adding extra
sugar in the first 2 years.



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Nurture with **FAITH**

Essential Principles of
Complementary Feeding



F Frequent feeding



A Active & Responsive feeding



I Increase in quantity & Include variety of foods



T Thickness



H Homemade & Hygienic

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Nourish with Diversity: Essential Food Groups for Balanced Nutrition



Breast Milk

Grains, Roots and Tubers



Legumes and Nuts



Dairy Products
(Milk, Yogurt, Cheese)



Flesh Foods (meat, Fish, Poultry,
Liver or other Organs)

Eggs



Vitamin A-Rich Fruits and
Vegetables



Other Fruits and Vegetables



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Steer Clear: Foods to Avoid During and Beyond Complementary Feeding



Biscuits, breads, pastries,
chocolates, cheese, ice cream,
doughnuts, cakes, etc.



Commercial breakfast cereals.



Packaged or stored foods,
artificially cooked foods with
preservatives or chemicals.



Repeatedly fried foods
containing trans-fatty acids.



Fruit juices and fruit drinks.



Any food containing HFSS
(high in fat, salt, and sugar).



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MYTH VS. FACT: UNVEILING THE TRUTHS OF COMPLEMENTARY FEEDING

MYTH

The locally available, cheap, and seasonal fruits are not good. Costly and imported fruits from other countries stored or preserved in cold storage have superior health benefits. Fruit juices are preferred and considered more nutritious over the whole fruit.



We must understand that the tinned or preserved juices contain chemicals or preservatives and may be dangerous.

FACT



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Avoid These in Complementary Feeding

- Delaying the start of complementary feeding
- Outside, Artificial, packaged and JUNCS
- Foods high in sugar, salt and trans fatty acids
- Ultra processed and refined foods
- Bottle feeding
- Use of screens during feeding
- Force feeding
- Foods that may cause choking

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