

Module on Weaning and Supplementary Feeding



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Introduction

Unlike the young of animals, human babies grow rather slowly and require special care, attention, love food and energy for their growth and development. The first natural food given to babies is the breast milk. There is no substitute for mother's milk. It has got anti-infective properties.

By and large, upto the age of four to six months the only and complete source of diet for the infant is the mother's milk. Around the age of one year the child gradually begins to eat the normal and regular food prepared for the family members. The period from complete breast-feeding and/or bottle-feeding to eating normal regular family food is called the weaning period in an infant's life. The gradual process of weaning from breast milk to the regular foods used by the family is very important and needs careful handling by the nursing mothers and the family members to ensure that the baby grows well and stays healthy. Therefore, the correct and adequate feeding of infants during weaning (i.e., during the time when mother begin to breast-feed their babies less often and gradually begin to introduce the usual adult foods eaten by the rest of the family members) assumes much great importance.

2. The Weaning Process

The human baby remains dependent on the parents for its growth and development. Upto the age of four to six months the only source of food to the child is the mother's breast milk. As the baby grows and develops, his food and energy requirements begin to increase gradually both in quantity and quality. The breast milk alone is not enough to ensure the physical growth and health of the developing baby. Therefore, the intelligent mother along with her breast milk takes recourse to the gradual introduction of family or adult foods to the baby and thus begins the slow and steady process of depending less and less on her breast milk. The baby of weaning-age over a period switches over to and gets used to eating family foods. The introduction of supplementary foods to the babies of weaning age and the gradual reduction of reliance on breast milk is called the weaning process. The babies of weaning age grow very fast and great care is needed to ensure that they are getting enough of the right kind of food.

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During weaning the baby begins moving about and comes in contact with germs in the environment he moves about. The mechanism to protect him against germs undergoes changes. After four or five months the nascent immunity received from the mother during pregnancy is replaced by the baby's own immunity which he develops as a result of contact with germs in the environment. On account of this change, the baby of weaning age (4 to 6 months) is likely to get infectious illnesses especially diarrhoea. Therefore, during the weaning process great care is warranted to take full hygienic precautions, storing and feeding the food to the baby.

If the supplementary food prepared for the baby is not stored and fed to him in the most hygienic way, weaning can be a dangerous time for him. The baby can get sick and get more infections, especially diarrhoea. If he is already malnourished, he may get worse during the weaning period because of poor feeding. The baby will register either poor weight gain or weight loss. It is important to remember that unless handled carefully, poor feeding and illness may stop children of weaning age to grow well and grow healthy.

3. Quantity and Quality of Supplementary Food

A healthy weaning age child grows very fast and therefore needs adequate quantity and quality of food for his growth activity. He has a small stomach and takes small quantities of food at a time. As such he needs something to eat more often and needs to be fed more frequently. There is not only need to feed him very frequently but also use foods with a high concentration of nutrients to make sure he gets enough. While awake, the weaning-age baby needs something to eat at least once in two to three hours.

The weaning age baby cannot eat filling and bulking food like the adults. He needs mixtures of foods which are nutritious and concentrated in energy. The baby needs food that is soft and easy to chew and swallow. Obviously the suitable foods for the weaning baby need not be expensive but have to be separately prepared in special ways under the most hygienic conditions possible and fed to him in small quantities but more often.

4. Keeping Weaning Foods Clean

While the infant is breast fed the risk of infection is almost zero. During the weaning process when he is fed other foods, infection with germs is more likely and this explains why so many

babies get diarrhoea or other illnesses during weaning. Food can be infected with germs before it is brought into the home; during storage; during preparation; or after it has been prepared but before it is fed to the weaning-age baby.

The utensils used to feed the baby should be kept clean, and hands should be washed before the weaning food is prepared and before the weaning-age baby is fed. Protect the weaning foods from flies and other insects and thus keep the weaning foods clean.

5. Healthy Growth and Development

For the healthy growth and development of weaning-age babies, feeding them with clean (infection-free) and correct weaning foods is important. But they need to be looked after by the mother or some one dependable during the weaning period, fed properly and given the much-needed emotional stimulation and the right kind of care especially when they are sick. The babies must stay happy and contented during weaning.

6. Starting Mixed Feeding

If semi-solid or solid foods are introduced to the babies prior to the weaning-age (i.e. 4 to 6 months) their small stomach may be full and they may take less breast milk and as a result may not grow well. On the other hand, after 4 to 6 months of age babies grow too big to thrive (live) on breast milk alone. Every baby is different. His needs are different. Mixed diet needs to be started earlier for big babies as compared to the smaller ones. However, great care needs to be taken to decide what food, when and how to give these foods to babies.

Considering the general growth and physiological development of the baby, by about 9 months, the baby is ready to eat some solid food to meet its growing needs. It must be remembered that these foods do not at this time replace breast milk; they add to the diet of breast milk. Breast milk will go on being the baby's main source of food and it should be given for as many months as possible to provide the close contact, love and attachment between the mother and her baby. Sudden weaning can be traumatic and should be avoided.

7. Foods for Babies of Weaning-Age

It is best to use foods from those the family eats and which are easily available to the family at a cost it can afford and which are good and nourishing for the baby. Only when the family diet is very poor in quality and quantity, foods be provided from outside the family for the baby to survive.

An ideal food mixture for a young child contains all the following types of food:

1. *The staple* food contains starch and is eaten by most of the people in the community at most meals. It is usually less expensive than other types of food. It may be rice, wheat, maize, cassava, sweet potato, banana, plantain, bread fruit, potato, etc. A soft, thick, creamy porridge can be made from any staple food, and can be given to the baby along with breast milk.

2. *Peas and beans* when eaten with cereal staples are as nutritious foods as food from animals are and are often less expensive; nuts and

seeds, peanut (ground nut), lentils, french bean, soya bean, sesame seeds, melon seeds, red bean, navy bean, chick pea, cowpea, etc., can be used to make dishes suitable for small children.

3. *Dark green leafy vegetables and orange vegetables* can be eaten by themselves or mixed into a child's staple food. As a general rule the darker green leafy vegetables and the brighter orange vegetables are best, e.g., spinach, amaranth, pumpkin leaves, sweet cassava, carrot, pumpkin, paw paped, etc. They can be eaten by themselves or mixed into a child's staple food.

4. *Foods from animals* are nutritious but expensive. They come in different forms: meat, including fish and organ meats such as liver; milk and foods from milk such as cheese or yoghurt, butter (it is a fat) and eggs. meat needs to be chopped very finely. Remove fish bone to avoid choking the baby. Food from animals can be mixed with the staple and fed to babies.

5. *Oils and fats or sugars* add useful energy to young children's meals and make the food softer and easier to swallow.

6. *Fruits* can be mashed or made into juice. Make sure the fruits are clean so that no infections are introduced. Water used for making juices should be clean.

7. *Breast milk*: A baby does not have to eat everything at the same time. If food from animals is not available to the family every day peas and beans are very good instead.

8. Mixing Weaning Foods

To begin with the weaning-age baby is put on to little (one or two spoonful) thick or semi-solid porridge (thin and watery porridge does not give the baby enough nutrition) made from local staple, boiled in water or milk, and always enriched with little oil or fat. Most of the baby's food will come from breast milk. As the baby develops taste, he enjoys eating more solid food. Gradually other foods can be added to the porridge. Peas and beans, or food from animals, or dark-green leafy vegetables or orange vegetables, can be added to or mixed with the staple either singly or in combination or all of these together depending upon their easy local availability and affordability. When the staple has one/to/three other types of food added to or mixed with it, it is called a two/three/four mix. It is important to make the food softer by adding a little oil or fat (use sugar/sweetener/honey if oil or fat is not available) to a baby's meal whether it is a two-mix, a three-mix or a four-mix. Do not forget the breast milk and do not interfere with the normal course of breast-feeding. The added foods should be given to the weaning-baby between breast-feeds. And do give the baby some fruit juice between meals. The weaning porridge, over a period, becomes the main food and the breast milk becomes an important extra.

One spoonful of food from animals and/or one spoonful of cooked peas or beans should be mixed with four spoonfuls of thick, cooked staple. To this should be added a handful of dark green vegetables or orange vegetables and a little oil or fat. Whether the foods are mixed or given separately the 1-1-4 rule should always be followed.

9. Frequency and Quantity of Porridge Mix

Start with one to two teaspoonsful of porridge mix about twice a day. This is in addition to continued frequent breast-feeding. As the baby grows and gets used to new food, the frequency and quantity of porridge mix increases to 3 to 6 large spoonsfuls at each feed. Of course, the baby still needs to be breast fed. Small babies have small stomachs. They need feeding small amounts of a thick porridge mix at least four times a day. Babies need to eat about every two hours when they are awake.

By about one year, young children will be eating more of the foods cooked for the rest of the family. Babies need to be or must be breast-fed to the age of two years or more. Because of very small stomachs, the babies need frequent feeding.

Foods can be costly and cooking them makes them even costlier. A soft porridge mixture can be made from the family food by pounding, chopping, mashing and straining it. Sprouted grains can be added to the baby's porridge to make it soft and easy to eat. It is important to strain the food for infants below 6 months; mash the food for those between 6 to 8 months; chop or pound the food for about one year old, and feed the pieces of food to children from about one year.

As a follow-up mechanism, the weaning process must be followed up on the baby's growth chart by weighing them every month. This will answer if the child is being fed often enough; if the child is getting a good mixture of foods that includes oil or fat; if the food is clean; and whether the child is still being breast-fed. Problems with weaning should be detected early and corrected soon. Sick children often lose their appetite but they need to be fed continuously during illness and given more food than usual after illness. It is important to breast feed frequently a young child with diarrhoea and administer him ORS or home-made sugar and salt solution to prevent dehydration. Remember that food and drink are vital to fight off illness.

10. Hygiene and Weaning Foods

All weaning foods need to be prepared, stored and fed to the baby under the most hygienic conditions. All rules for personal hygiene (e.g., frequent hand washing) should be strictly observed while handling food, dishes, eating utensils and before feeding the baby. The baby weaning foods must be carefully and safely stored to prevent the food from spoiling. The risks of infection must be checked to make weaning a success. Readymade (factory produced) weaning foods are costly and can be unsafe, not nourishing enough and can cause malnutrition. It is best to take recourse to locally available affordable and culturally acceptable foods and teach and demonstrate to the mothers how to prepare and feed the weaning feeds to the babies. The working mothers are often not able to give enough care to their babies during weaning. They need to get help from relatives and friends and make use of day-care centres or creches.

11. Role of Health Workers/Link Persons

The health workers must

- (a) Ensure that mothers know what type of food an infant (a young baby) needs;
- (b) give details of how to prepare correct and locally appropriate nutritious mixes to feed young babies during weaning;
- (c) inform, educate and motivate the nursing mothers and the family members about the importance of weaning from breast milk to enough of the right kind of family food to keep the baby growing at a healthy rate;
- (d) give information and demonstrate to mothers how to store weaning foods safely and free from germs that can cause infection;
- (e) tell the mothers where the low-cost weaning foods are available and how and when to use them.

The Health Workers/functionaries, community workers who look after infants and others concerned with mother and child care can adapt many of the useful points made in this Module to their local situation. Your observations made on the basis of your knowledge of local situation and discussions with mothers and families can support and supplement this module. This in turn will help you in your work to promote good feeding to the infants and the young children.

While giving this module a local dip, several examples of locally appropriate mixes can be added.

The Nutrition Support Programme envisages general co-ordinated activities within the health sector and other related sectors (e.g., agriculture, education and community development) to improve the nutrition status of children and mothers.

It needs no reiteration that the problem of protein-calorie malnutrition (PCM) can be solved to a large extent by educating people especially the rural communities to effectively utilize inexpensive locally available foods which they can afford. In order to carry out such nutrition education the health workers must process practical information as to the most suitable recipes, based on locally available foods which can be used by poor communities for infant and child feeding in different regions of the country. The recipes must be such that they are acceptable to rural communities and are also nutritionally adequate (A List of weaning foods given by Dr Shanti Ghosh is given in the Appendix). Faulty feeding habits arising out of ignorance, superstitions and wrong food beliefs are indeed responsible for aggravating protein calories malnutrition (Kwashiorkar and Marasmus) that occurs during the crucial transitional phase of a child's life from breast-milk to other types of foods. The health workers must understand the weaning habits and weaning practices of the community and then plan and launch a suitable educational programme.

References

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APPENDIX

Suggested List of Weaning Foods

Start this food from 4-6 months of age: Dal, banana, khichri, sag, vegetables, wheat flour porridge.

For One-Year Old Child

Morning	125g Milk, Sugar, 1 Slice, 1/2 Chapati
10 a.m.	1 Banana, 1 Chapati, 1/2 Katori Atta Halwa
Noon	1 1/2 Chapati, 1/2 Katori Dal, Green vegetables
2 p.m.	1/2 Katori Atta Halwa or 1 slice
4 p.m.	125g Milk, Sugar, 1 Slice, 1/2 Chapati
Night	1 Chapati, 1/2 Katori Dal

Wheat-based Diet

Morning	125g Milk, Sugar, 1 Slice, 1/2 Katori rice or Suji Kheer
10 a.m.	1 Banana, 1 Katori khichri or 1/2 Katori Suji Halwa
Noon	1/2 Katori Khichri or 1 Katori Rice+1/2 Katori Dal, Green vegetables
2 p.m.	1/2 Katori Suji Halwa or 1/2 Katori Khichri or 1 slice
4 p.m.	125g Milk, Sugar, 1 Slice, 1/2 Katori rice, 1/2 Katori Suji Kheer
Night	1 Katori Khichri or 1/2 Katori Rice+1/2 Katori Dal

Rice-based Diet

For Two-Year Old Child

Morning	125g Milk, Sugar, 1 Slice, 1/2 Chapati
10 a.m.	1 Banana or 1 Chapati or 1/2 Katori Khichri
Noon	1 Katori Khichri or 1 Chapati+1/2 Katori Dal
2 p.m.	Groundnuts or Roasted Gram
4 p.m.	125g Milk, Sugar, 2 Slices or 1 Chapati
Night	1 Katori rice or 2 Chapatis, 1/2 Katori Dal, Green vegetables.

Some Common Recipes

Weaning Foods and Measures

1. Sago Kanjee

Sago	25g
Roasted Bengal gram	25g
Jaggery	25g
Water (cups)	2

Method: Roast sago and powder Bengal gram. Add sago to 1 1/2 cups of boiling water and cook. Prepare a batter of Bengal gram powder in 1 cup of water and pour it into the cooked sago, stirring continuously. Cook for 10 minutes. Add jaggery and cook for five minutes again.

2. Porridge of Wheat Dalia

Wheat Dalia	50g
Sugar	15g
Milk	50g

Method: Roast wheat dalia and add to boiling water containing 2 bay leaves and cook until it is soft, then add sugar and boiled milk.

3. Ragi porridge

Ragi flour roasted	50g
Bengal gram dal flour (roasted)	4 teaspoons
Groundnut cake powder (roasted)	2 "
Jaggery	20g

Method: Boil jaggery solution. Mix ragi and Bengal gram flour and make a batter with hot water. Pour the batter slowly into the jaggery solution, stirring continuously. Boil for 10-15 minutes. Serve warm.

4. Bajra Infant food

Bajra	50g
Green gram dal	3 teaspoons
Skim milk powder	2 "
Groundnuts	2 "

5. Khichri

Rice	50g
Lentil	25g
Spinach	50g
Oil	2 teaspoons
Salt	To taste

Method: Cook rice and dal together and mash. Boil spinach, mash and strain. Add this spinach purce, salt and heated oil to the rice dal mixture, stir and serve.

6. Bengal gram dal khichri

Rice	50g
Green gram dal	25g
Roasted Bengal gram	50g
Green leafy vegetable	25g
Oil	1 teaspoon
Salt	To taste

Method: Boil and mash rice and green gram dal. Boil, mash and strain the spinach. Add this spinach, powdered Bengal gram and salt to the rice and dal mixture, and cook for a few minutes. Season with oil.

7. Khichri of Wheat Dalia

Wheat dalia	50g
Lentil	50g
Potato	Amount desired
Green vegetable	" "
Oil	3 teaspoons
Salt	To taste
Onion	1 small
Ginger	2g
Bayleaf and cardamom (optional)	1 each

Method: Clean and wash dalia and lentil separately and cut vegetables. To boiling water add onion, ginger, bay leaf, cardamom and dalia. Cook until half cooked. Then add lentil and vegetables and cook until soft. Season with salt and oil.

8. Khichri of Rice, Dal and Vegetables

Rice	50g
Dal (lentil)	25g
Potato	Amount desired

Any vegetable	" "
Oil	3 teaspoons
Salt	To taste
Onion	5g
Ginger (optional)	2g
Bay leaf (optional)	1g

Method: Clean and wash rice and lentil separately and cut vegetables small. To boiling water, add a piece of onion, ginger, bay leaf, cardamom and rice. Cook until half cooked. Then add lentil and vegetables and cook until soft. Season with oil and salt. This can be made with vegetables also.

9. Rice Uppuma

Rice	25g
Green gram dal	25g
Onion	1 large
Any vegetable	10g
Mustard	1/2 teaspoon
Groundnut oil	4 teaspoons
Salt	To taste
Water	2 cups

Method: Roast rice and dal and grind into granules. Cook green gram dal with 3/4 cups water and mash. To hot oil, add mustard, onion and fry and then add water and salt. Add the rice granules and the vegetables to the water and stir. Cook for 10 minutes and add the green gram dal paste. Drumstick leaves may also be used instead of vegetables.

10. Chapatis with Atta, Bengal Gram Powder and Leafy Vegetables

Atta	
3 parts	
Bengal gram powder	1 part
Green leafy vegetables	As desired

Method: Chop, boil and mash leafy vegetables. Mix the mashed vegetables and Bengal gram flour with atta and make a dough and prepare the chapatis.

11. Sweet Dal

Rice	30g
Red gram dal	60g
Spinach	30g
Jaggery	60g

Method: Roast and powder rice and red gram dal. Mix the two and make a batter with cold water. Boil mash and strain spinach. Mix the batter and spinach pure with jaggery syrup and cook for a few minutes.

12. Khamam Dhokla

Bengal gram dal	50g
Black gram dal	25g
Rice	50g
Amaranth leaves	50g
Curd	25g
Oil	1 teaspoon
Salt	To taste
Mustard	Few seeds

Method: Soak Bengal gram dal, black gram dal and rice separately for a few hours. Grind them separately and mix. Add curd and salt and ferment the mixture overnight. Add Amaranth leaves, season with oil and mustard seeds, and pour the batter into idli moulds and steam.

13. Ragi Adai-Sweet

Ragi flour	30g
Roasted Bengal gram dal	3 teaspoons
Jaggery	15g
Coconut scraping	1 teaspoon
Groundnut Oil	2 teaspoons

Water	3 teaspoons
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Method: Dissolve jaggery in water. Add Bengal gram flour, ragi flour and coconut scraping to the jaggery water to make a thick dough. Prepare the adai on a greased iron pan 'tawa'.

14. Cholam (Jawar) Puttu

Cholam flour	30g
Roasted Bengal gram dal flour	25g
Coconut scraping	5g
Jaggery	20g
Salt	To taste
Water	2 cups

Method: Mix Cholam flour, Bengal gram flour, coconut scraping and salt together. Sprinkle two spoonfuls of water and then mix and steam for 15 minutes. Mix jaggery powder and serve.

15. Laddoos of Groundnuts and Gingelly seeds

Groundnut	25g
Jaggery	25g
Gingelly seeds	1/2 of groundnut & jaggery

Method: Roast groundnut and gingelly seeds. Pound them with jaggery. Make small balls with the mixture.

16. Panjiri

Wheat atta	75g
Jaggery or sugar	15g
Oil or ghee	2 teaspoons

Method: Roast wheat atta in oil till light brown colour. Add jaggery to it and mix well.

17. Sattu

Method: Soak barley overnight. Dry a little, roast and grind. Mix with sugar or jaggery according to taste.

18. Suji Kheer

Suji	25g
Sugar	10g
Milk	250ml

Method: Boil milk and add suji. Keep on a slow fire till it becomes semi-solid. Add sugar.

19. Rice Kheer

Rice	25g
Sugar	10g
Milk	250ml

Method: Clean, pick and wash rice. Boil milk, add rice and cook till semi-solid. Add sugar.

20. Rice Kanjee

Rice	100g
Water	400-500ml
Salt	1.5-2g

Method: Clean, pick and wash rice. Add rice to water and cook till soft, adding salt.

21. Poha (Leftover Rice)

Rice	
Onions	
Potatoes or other vegetables	

Method: Brown onions in oil and add cumin and mustard seeds. add vegetables and cook till tender, adding minimum quantity of water. Finally add rice, cook for 2-3 minutes.