Nutrition: A Life Cycle Approach
HSC CC409: Unit 3
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LACTATION

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Breast-milk contains all essential nutrients needed for the infant; it provides the best nutrition and protects the infant from infections. Breast-milk is a natural food and is more easily digested and absorbed by the infant as compared to formula milk prepared from other sources. Colostrum, which is the milk secreted during the first 3-4 days after child birth, is rich in proteins, minerals, vitamins especially vitamin A and antibodies.

In addition, it has a laxative effect as well. Breast-feeding helps in reducing fertility and facilitates spacing of children. Lactation provides emotional satisfaction to the mother and the infant. Recent evidence suggests that human milk may confer some long term benefits such as lower risk of certain autoimmune diseases, inflammatory bowel disease, obesity and related disorders and probably some cancers. Therefore, breast milk is the best milk for the newborn and growing infant.

advantages of breast-milk

In addition to providing nutrients, breast-milk has several special components such as growth factors, enzymes, hormones and anti-infective factors. The amount

Exclusive breast-feeding ensures safe nutrition to the infant and all round development of health

of milk secreted increases gradually in the first few days after delivery, reaching the peak during the second month, at which level it is maintained until about 6 months of age. An average Indian woman secretes about 750 ml of milk per day during the first 6 months and 600 ml/day subsequently up to one year. Many essential components are in concentrated amounts in colostrum as compared to mature milk, compensating for the low output during early lactation.

Breast-milk provides good quality proteins, fat, vitamins, calcium, iron and other minerals up to 4-6 months. In fact, quality of some of the nutrients can be improved by supplementing the diet of the mother with nutrients. Growth performance of majority of the breast-fed infants is satisfactory up to 6 months of age. Breast feeding is associated with better cognitive development possibly due to the high content of docosahexaeonic acid (DHA) which plays an important role in brain development.

Nutrition During Breastfeeding

- The importance of nutrition during breastfeeding
- Energy and nutrient requirements during breastfeeding
  - Energy
  - Protein
  - Other nutrients
- Comparison of nutrient requirements in pregnancy and lactation
- Nutrient supplementation during breastfeeding
- Things to avoid during breastfeeding

The importance of nutrition during breastfeeding

During the first six months after delivery, the baby is fed only on breast milk, and the baby depends on the mother for all nutrient requirements. Eating a healthy diet while you are breastfeeding is important because what you eat determines the energy, protein, nutrient and vitamin content of your breast milk. Additionally, some minerals and vitamins are required for body processes such as healing wounds quickly (e.g. vitamin C and zinc). Nutritional demands during lactation are high and can have a negative impact on both you and your infant if they are not met. Daily diet will be adequate provided that your food selection and preparation is appropriate

Energy and nutrient requirements during breastfeeding

Nutritional needs during breastfeeding are increased in response to breast milk production. They must meet the requirements of both baby and mother

Energy

An additional 500 kcal for the first six months, and 400 kcal during the next six months, are required for a lactating mother. This can be met by eating, for example, an extra 6-8 slices of bread per day. Simply eating more of the usual balanced diet should allow you to meet the higher energy demand while you breastfeed. On average, 100 ml of human milk gives 70 kcal of energy. During the first six months after delivery, 750 ml of breast milk is produced daily. If the extra demand for energy is not met from dietary sources, then your reserved fat stores will be used instead.

Protein

The increase in protein requirements during lactation are minimal compared to that of energy. However, if your energy intake is low, protein will be used for energy production. The additional protein requirements during lactation can be met by consuming protein rich foods (e.g. one egg or 25 g of cheese or 175 g of milk).

If you do not have a high enough protein intake, then the proportion of casein in your milk may be reduced. Casein protein is an important component of your milk, and helps to provide your baby with calcium and phosphate. It also forms a clot in the stomach that allows more efficient nutrition. Insulin resistance is modulated by protein quality, rather than quantity. Proteins derived from fish might have the most desirable effects on insulin sensitivity.

Other nutrients

Your intake of some nutrients (e.g. vitamins C, A, thiamine, riboflavin, B6, B12, iodine and selenium) is reflected in your breast milk composition. Newborn babies have very little amounts of these particular nutrients, and so they rely on breast milk for an adequate supply. Good sources of iodine are seafood and iodised salt. On the other hand, nutrients in your breast milk such as zinc, iron, folic acid, vitamin D, calcium, and copper are not affected by what you eat. The levels of these nutrients in human milk are constant, despite variations in the mother's diet or body stores. Dietary and supplemental intake of these nutrients during lactation will benefit you more than your baby.

Calcium is essential during lactation because it is required for milk production. An intake of 1000 mg calcium per day is required during the first six months after delivery. 500 ml of milk or milk products per day must be taken in addition to eating calcium rich foods, such as green leafy vegetables and fish. However, some fish can contain high levels of harmful substances such as mercury. Since mercury occurs naturally in the environment all fish contain some amount of this element. Luckily, fish taken from Australian waters generally contain very low levels of mercury but breastfeeding women still need to be aware of the potential for this toxic element to be passed to their baby through their milk

Comparison of nutrient requirements in pregnancy and lactation

The table below shows the daily requirements of some important nutrients in pregnancy and lactation. The data shown is for women between 19 and 30 years of age. Some variations in daily requirements may be seen outside of that age bracket. During breastfeeding, more energy and vitamin A are required compared to during pregnancy. Additional increases in calcium during pregnancy and lactation are not needed in women whose usual diet is rich in dairy products and other good sources of calcium.

Nutrient	Normal recommended intake	Recommended intake during pregnancy	Recommended intake during lactation
Energy (kcal)	2,000	2,450	2,500
Protein (g)	46	71	71
Vitamin A (µg)	700	770	1,300
Iron (mg)	18	27	9
Folic acid (µg)	400	600	500
Iodine (µg)	150	220	290
Calcium (mg)	1,000	1,000	1,000
Zinc (mg)	8	11	12
Vitamin B12 (µg)	2.4	2.6	2.8

Nutrient supplementation during breastfeeding

A single dose of 200,000 IU should be taken no later than eight weeks after delivery. In countries like Australia where the prevalence of anaemia is less than 40%, iron and folic acid supplementation during lactation may not be necessary, provided adequate amounts of these nutrients are obtained from the diet.

Things to avoid during breastfeeding

- Minimize caffeine intake.
- Be careful with drugs.
- Alcohol and smoking should be avoided. They can make your baby feel sleepy, nervous and irritable.
- Resist the temptation of losing weight through diet or medication.

Key messages

- Drink water, milk and fruit juices as needed.
- You need to eat more than usual to replenish energy that is lost through breastfeeding.
- Energy is essential, so eat regularly to increase your food intake and meet all your nutritional needs.
- Keep your intake of empty calorie foods to the minimum and eat more nutrient-dense foods.
- Plan your meals well and use the food pyramid as a guide in selecting your daily foods. Include plenty of fresh fruit, vegetables, milk and milk products, fish, poultry, nuts, whole grains, parboiled rice, beans and lentils.

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