

Babylon University – College Of Medicine
Department of Community Medicine

*Lectures in Community Medicine
For 4th Stage Students
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Lecture 19

Breast Feeding

Breast feeding had always been the natural infant feeding since the creation of mankind. It is the natural feeding practice not only in humans but in all mammals.

During the 19th century and with the onset of the industrial revolution & development of the new world, women went out of their houses for work & many of them abandoned breast feeding & changed to bottle feeding. This practice started in the developed world and was then exported to developing countries, where it was considered as a sign of modernization.

There was an observation that mortality & morbidity rates were higher in bottle fed than in breast fed infants. It wasn't until the 20th century that the causes of this phenomenon were clearly understood.

How is milk produced

Milk production is under the control of the hormone **prolactin** which is secreted from the anterior part of the pituitary gland.

Oxytosin is another hormone produced by the posterior part of the pituitary gland and is responsible for milk ejection.

In the first few days after delivery (2-6 days), the mother feels that her breasts is empty but in fact it is not; this is because her breasts contain a small but adequate amount of **Colostrum**.

Colostrum is produced in small but adequate amounts to cover the nutritional and immunological needs of the neonate. This feeling of emptiness gives the mother the false belief that she is not producing enough milk, and will lead her to use formula milk to feed her baby.

Following this and during the second week after delivery, the mother will feel fullness in the breasts, which means that milk production has started. This process can be accelerated by putting the infant on the breasts more soon

after birth, (within 30 minutes), and to continue breast feeding on demand. This will enhance the production of prolactin, and hence milk production.

Factors affecting the Composition of Breast Milk

The composition of breast milk varies according to the variation of several factors. These are:

1. **Stage of lactation:** Colostrum is produced during the first week after birth, followed by transitional milk during the second week, and mature milk thereafter.
2. **Time of the day:** Fat content is highest at mid-day.
3. **Sampling time within the same feed:** (at the beginning of the feed “foremilk” there is more water & at the end “hind milk” there is more fat). Therefore the mother should not end the feed & let the baby end it when he wants. If the feed is ended before the hind milk is taken, the baby will feel hungry soon after the feed
4. **Maternal Nutrition:** The mother should eat a well balanced diet with more energy and proteins. The quality of milk will be affected by maternal under-nutrition only in its severe forms.
5. **Climate:** In hot climates there will be more water so the mother does not have to give water to the infant in addition to her breast milk. In cold climates the fat content is higher lead to increase energy intake.
6. **Individual variation:** from one mother to another.

Positioning in breast feeding

Correct positioning will determine the success of breast feeding. There are various steps to correct positioning:

1. **Positioning of the mother:** She must breast feed in a comfortable & relaxed position because if not she will feel tired & end the feed quickly. The mother should be sitting with a straight back (supported with a pillow or if she can't sit straight then she can feed the baby while lying down on her back & the baby on top of her, or on her side and the baby beside her.
2. **Positioning of the infant:**
 - Head and body in one line with a straight neck.
 - Infant facing the mother.
 - Infant well supported (when he is still small one hand is enough for support but later on both hands are used).
 - Infant close to the mother.
3. **Attachment to the breast: well attached or not?**
 - Mouth should be wide open Chin touching the breast.

- Lower lip turned outward.
 - The lower part of the areola should not be seen & the upper part of the areola should be partly visible.
4. **Effective suckling:**
Slow deep sucks, pauses from time to time, swallowing can be seen, the mother feels no pain.

Advantages of Breast Feeding

1) Nutritional

Breast milk contains all nutrients needed by the infant in the appropriate composition and quantity, especially during the 1st 4-6 months of life.

2) Immunological Properties and Protection against Infection

Breast milk is sterile and clean, it contains Abs specific to the organisms in the birth canal of the mother, leukocytes (4000cells/mm³).

It promotes the growth of lactobacillus in the GIT and contains lactoferrin. Even when breast fed infants develop diarrhoea, it is usually mild, with a lower risk of hypernatraemia and metabolic acidosis.

Breasts fed infants develop less allergic conditions, less asthma & less eczema because they are not exposed to substances strange to their bodies.

3) Psychological Bonding between Mother and Infant

Breast feeding will lead to the establishment of a strong relationship between the mother and the infant.

The first sound the baby hears is the sound of his mother's heart when he is inside the uterus & when he is close to her while breast feeding he will hear the same familiar sound.

This interaction will lead to the production and release of prolactin and oxytocin by the pituitary of the mother, as well as the production of T and B lymphocytes, and macrophages in the milk.

4) Fertility Control

Exclusive breast feeding which enhances the production of **prolactin** by the pituitary and the maintenance of its level in blood, will **inhibit** the **pituitary-ovarian** axis and therefore **inhibit ovulation**.

This is the natural method of contraception known as the **Lactational Amenorrhoea Method (LAM)**.

As long as the mother is breast feeding exclusively, giving 2-3 night feeds and is not menstruating, the risk of a new pregnancy is minimal.

This method is known to be reliable until complementary feeding is introduced, which means that breast feeding is going to be less frequent and therefore a lower blood level of prolactin is expected, which may not be inhibitory to the ovaries.

5) Decrease Post-partum Blood Loss: The release of Oxytocin will help the uterus to contract and will therefore lead to decrease in blood loss. This will help in the decrease of the prevalence of anaemia after pregnancy.

6) Protection against Breast Cancer: It was found that breast feeding protects the mother against breast cancer.

7) Convenience: Breast Milk is convenient, always ready, in the correct composition and concentration, correct temperature and is not costly.

Disadvantages of bottle feeding

1. Contamination resulting in diarrhoea and malnutrition.
2. Cost is high so the mother will over-dilute feeds which will lead to malnutrition.
3. Vitamin deficiency.
4. Iron deficiency leading to anaemia.
5. Hypernatraemia leading to acidosis especially in LBW infants leading to kidney disease. Bottle fed infants are more prone to develop hypernatraemic acidosis when they have diarrhoea because of the high sodium content of formula milk.
6. Hypercalcemia
7. Higher content of saturated fatty acids in cow's milk but. Infants need unsaturated fatty acids for brain development. Cow milk is deficient in linolenic acid and cholesterol which are needed for brain growth & formula milk is low in fat which means that it gives insufficient energy.
8. High casein content of cow milk leads to indigestion and curd formation leading to constipation.
9. Allergic conditions are more prevalent among bottle fed infants due to the presence of unfamiliar proteins in cow milk leading to antibody production.
10. Nipple confusion and refusal to breast feed because the mechanism of suckling the breast is different from that of sucking the bottle. The child will be confused & will abandon the suckling mechanism preferring the sucking which is easier.

Contraindications of Breast Feeding:

Very rare & practically non-existent. Some of the conditions claimed to be contraindications are not absolute but relative. These are:

1. **Breast Ca:** Is one of the contraindications because of the hormonal effect on the tumour. If it is only a lump which was removed and the follow-up indicates no recurrence, the mother is allowed to breast feed if she chooses to.
2. **Inborn errors of metabolism** (PKU and galactosaemia). These are rare conditions. Specially prepared milk is needed to prevent brain damage and mental retardation.
3. **Breast milk jaundice** which is a very, very, very rare condition starting 2 weeks after birth. It must be differentiated from physiological jaundice which starts on the third day after birth.
4. **Beta-Streptococcal infection** of the throat of the infant because it can lead to severe bilateral mastitis in the mother. Breast milk should be expressed and given to the baby by cup and spoon.
5. **Puerperal psychosis:** In the past the mother used to be hospitalized and kept away from her baby so she can not harm him. Currently, the practice is to hospitalize the baby with the mother, but under strict observation. The point is that this will help in the recovery of the mother.
6. **Radioactive therapy to the mother**, where the baby should be kept away from her.

Problems of Breast Feeding

1. **Engorged & congested breast:** Mainly due to the increase of fluid and blood in the breasts. Early initiation of breast feeding will prevent this condition. If the infant is put on the breast in the correct position, he will not be able to empty the breast. Milk expression manually or mechanically by a pump will alleviate the symptoms. Analgesics, massage & cold sponging can also be used.
2. **Milk fever:** This happens when the breast is filled with milk, the milk will be pumped back into the circulation leading to an immune reaction, which is self-limiting & resolves spontaneously.
3. **Nipple pain & cracks:** This happens when only the nipple is taken by the infant, and not the areola. This happens due to incorrect positioning & is treated by correcting the position of the child & not by using antibiotics or creams.
4. **Refusal to suckle:** This happens when the infant is sick or in a very premature or LBW infant (<1800gm) where the reflexes are not

developed. Nipple confusion is another cause. Separation of the child from his mother for a few days (if the mother is hospitalized for example) may also cause this condition.

5. **Mastitis and breast abscess:** Due to blocked ducts superimposed by bacteria leading to mastitis, which may develop into abscess. If detected early (before pus accumulation) it can be managed by massaging the breast, expressing milk, giving antibiotics, recommending bed rest & giving analgesics. If pus is detected drain the breast surgically and give antibiotics. Do not stop breast feeding in Mastitis & use the other healthy breast.

Steps to successful Breast Feeding (BF):

1. Train all health care providers to implement BF policy and inform pregnant women about the benefit of BF.
2. Help the mother BF within half hour after delivery.
3. Show the mother how to breast feed.
4. Allow the mother and her baby to remain together for 24 hours to enhance psychological bonding
5. Advise the mother about fluid intake and proper diet
 1. 2 liters/day fluid (minimum requirement)
 2. 550 extra Kcal/day
 3. Ca intake should be 1200-1300 mg/day
 4. Supplement with vitamins & iron
 5. Advise about avoid taking drugs
6. Establishment of BF group support & refer mothers to them after discharge from hospital.

Complementary feeding (weaning)

It is the transitional stage when a young Childs diet changes gradually from milk alone to a diet based on what the family eats.

Weaning begins when the child is introduced to food other than milk and is completed when the child is fully accustomed to regular family diet. This period differ from one child to another.

During weaning the child should continue breast feed.

Dangers of this period:

It is a dangerous period because of the high mortality in it due to:

1. Diarrhea which results from incorrect preparation and storage of food, the water used for preparation may be contaminated and the food may be

stored for a long period of time which will promote the putrefaction of food, this will lead to gastroenteritis due to bacterial growth.

2. Malnutrition: which is caused by diarrhea as well as not giving the infant enough proteins and energy in the diet.

Why and how weaning food introduced?

Weaning usually starts between 4-6 months where the child can swallow and digest semisolid food at this age but it mainly depend on the growth of the child.

If the growth curve of the child is getting slower and the mothers milk is not more sufficient for his growth needs, then we start at 4 months.

If the growth curve is satisfactory, then we start at 6 months.

It also depends on the ability of the infant to swallow semisolid food and on the interest he shows in food.

Weaning can be completed at any time between 12-24 months. When the child can consume solid family food

Problems of weaning:

Early weaning at 40 days as is the common practice in Iraq increases the incidence of diarrhea and allergic conditions.

The foods given are not useful and they will not be absorbed by the GIT as it not ready to digest and absorb these food.

Late weaning after the age of 6 months, will make the child unable to eat with solid foods. And it may lead to malnutrition.

Weaning should be done gradually using a small teaspoon, initially we give one meal ; of one food type per day, watch the infant adapts and tolerates it.If the child adapts (no vomiting or diarrhoea) we can add another food and so on (increase the quantity, variety and frequency). Give about 2-4 additional meals at the age of 6 months by using the cup and spoon. The energy content of the meal should be increased by increasing oil and fat.Add solid food at the age of 7 months and the meals should reach 5-6 per day.

Thing to consider:

- Separate the child's food from that of the family in a separate dish because the child eats slowly, and by the time other members have finished, he would still be eating. This will help the mother to see how much the child has eaten from his dish. Active feeding by an adult will help the child to eat all the food in his plate.

What to give the baby? Depends on

- What is traditionally fed to the child (each region & each country has its own traditional food).
- What food is available to the family.
- Time available for the mother for preparation food & feeding the child.

Notes:

- **Start with Fruit juices, rice soup, vegetable soup** & mainly vegetable food **until 6 months**, then later on add **white meat** (chicken), then **red meat** (beef & lamb) providing the child is adapting so ending up with what is called a multimix (supplements of carbohydrates, proteins, vitamins, minerals, oil & fat for calorie supplementation).
 - **Honey** should not be given before the age of 1 year because it may be contaminated.
 - **Eggs** should not be given until the age of 1 year (although it is an excellent source of protein) because the egg may be contaminated with salmonella. It needs to be hard boiled, which a young infant can not swallow. Egg white may cause allergic reactions.
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