



University of Jordan
Faculty of Medicine



Medical Committee
The University of Jordan





Community Medicine



Lecture Title:	Child Nutrition				
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Brief review :

We said in the last lecture that mothers during pregnancy have special needs, especially in certain supplements, and we said that there are nutrition counsels for pregnant women but here in Jordan, doctors check the nutrition status for pregnant women more than counsels.

Remember that pregnant diet is NOT a matter of high calories or quantities; it's a matter of high quality (type of food she eats).

The only nutrition that are needed in additional quantities during pregnancy are folic acid, iron and vitamin A.

Now, we will start with:

A-Summary of increased nutritional needs during pregnancy and lactation:

We'll consider the increased need of: a) Energy b) proteins c) vitamin A d) iron

a) **Energy :**

- Energy for non pregnant woman is around **2200 kcal**
- Energy needs start to increase from the second trimester not from the first one.
- The extra need of calories during second trimester is about **240kcal** and during third trimester is about **452kcal** because of the development of the embryo brain, etc

	Non pregnant	1st trimester	2nd trimester	3rd trimester
Extra need	-----	-----	+240	+452
Total	2200	2200	2440	≈ 2900

- During lactation time, mothers need more energy (about 500 cal extra)
- Born baby needs energy intake more than embryo.

Note: Although calories are needed during pregnancy, we shouldn't just obtain them from any source; it's a matter of nutrition that'll supply the mother with these calories.

We have to fulfill this need of extra calories from proteins, some carbohydrates and **a little bit of fat**

1g of protein= 4 calories 1g of carbohydrate= about 4 calories 1g of fat= 9 calories

- Again when we say an increment of calories/ energy during pregnancy, this increment should be in proteins (mostly) more than carbohydrates & fats (the least), why are proteins the most important? Because proteins are responsible for the cells generation in the embryo/infant.

b) **Proteins:** are very important during pregnancy and lactation, around **25g** extra in both pregnancy & lactation periods... mainly obtained from animal sources.

- c) **Vitamin A:** it's the most important nutrient needed by the child during **lactation**.
- Increased by **70 units** (extra) during pregnancy, whereas during lactation; it's increased by **600 units** (extra). It is also the max nutrient needed by the mother during lactation apart from energy

✓ Back to the figure

- d) For **iron**, during lactation it's not needed (as a supplement for mama); we need it only during pregnancy and especially in the second trimester.
Found in Green vegetables / main source: animal source.

Q: Do you think that breast milk is a rich source of Iron?

Ans: it's sufficient for the baby for the first 6 months (exclusive breast feeding), after that we have to supply the baby with extra sources of iron (vegetables, fish, chicken, etc).

In the figure, there are notes showing the sources of each type of nutrition (vitamin A- iron- proteins), we have to know 2 to 3 sources for each one 😊

B-consequences in case of maternal malnutrition:

✓ **Consequences on maternal health :**

- 1- Increased risk of maternal- pregnancy complications and death increased infection
The more the mother / child are malnourished the higher is the risk to have infection, also if the infection started, it may cause malnutrition; because the pregnant woman might have diarrhea ... Meaning: it's a circle " malnutrition causes infection & vice versa"
- 2- Anemia lethargy and weakness, lower productivity, and we mentioned that Anemia is one of the most common causes of **morbidity** in women, at the same time chronic Anemia maybe indirect cause of **maternal mortality**.

(Anemia should be covered by giving iron supplements, because food is not enough source of iron sometimes)

✓ **Consequences on fetal and infant health:** infants are more affected by deficiencies/malnutrition than the mothers.

- 1- Increased risk of fetal, neonatal and infant death
- 2- Intrauterine growth retardation (delay in growth during pregnancy) leading to deliver a small for date baby, which means to have a baby with low birth weight < 2.5 kg **OR** prematurity.

The difference between premature and low birth weight baby is that the **Premature infant** has NOT completed 36 weeks of intrauterine life (pregnancy was terminated before the completion of 36 weeks), while **low birth weight** means that his weight at birth is less than 2.5 kg.

*Premature infants and those with low birth weight are at higher risks & higher infant mortality rate.

- 3- Birth defects
- 4- Brain damage and increased risk of infection

C-Nutrition protection and promotion:

1- Food hygiene education, we should warn the mother who wants to bottle feed her child (after breastfeeding) about this point, and also while she is pregnant, she must have hygienic food; because diarrhea for the pregnant woman or the baby might cause dehydration that could lead to hypovolemic shock and maybe death, whereas if the woman isn't pregnant or the baby became adult, dehydration and complications are less, so hygiene is needed/important during pregnancy, lactation and for infants.

2-Malnutrition in children /infection (they are related to each other), there are some infections that are simple, but malnutrition makes them severe, for example: measles is an infection that causes runny nose, upper respiratory tract infection & rash in well-nourished babies, whereas if the baby is malnourished he might go into pneumonia, hepatitis & encephalitis.

3-Diet of pregnant and lactating mothers (we talked about it)

4-Breast feeding and weaning (starting food apart from breastfeeding/ WHO recommends to start weaning after the first 6 months of birth), we have to promote breast feeding during pregnancy- in the last trimester (how important and healthy it is for the infant)

5-Environmental sanitation including water and food sanitation

6-clean drinking water

7-prevention of diarrhea and dehydration in children by promoting the food hygiene

D-Advantages of breastfeeding:

For baby: (the doctor just read the slides)

1- Anti infectious advantage; due to Igs found in the breast milk, especially in the first part of the breast milk (colostrum, which is secreted during the first 3 days of lactation)

which is rich in IGs that prevent infections and immunity related diseases/ autoimmune diseases in infants, like: bronchial asthma, Crohn's disease and juvenile diabetes...

So breastfed children are at lower risks to have autoimmune diseases and these IGs that are present in the breast milk will be carried in the infant's body all his life.

- 2- due to the digestibility of breast milk, babies rarely suffer from diarrhea or constipation
- 3- The stools of breastfed babies are soft & without smell, whereas bottle-fed babies are usually constipated & have fatty & smelly stools
- 4- SIDS (sudden infant death syndrome) in which you wake up in the morning and find the baby dead, so breastfed babies are less exposed to this syndrome
- 5- Breast milk is constantly changing in its composition to meet the changing needs of the baby; it has the exact combination of proteins, fats, vitamins and minerals the infant needs in the first six months.
- 6- Breastfed babies are constantly exposed to a variety of tastes through their mother's milk (بتغير الطعم حسب شو الام بتاكل) and by that improves the taste sensation of the newborn.
- 7- Breastfed children are at less risk for Crohn's disease (auto immune disease) and many other immune diseases like **bronchial asthma**, because breast milk improves the immune system of children.
- 8- children who were breastfed are less likely to need braces (due to the unique sucking action required by breastfeeding)
- 9- IQ levels are 8 points higher in breastfed children
- 10- Adults daughters who were breastfed are at less risk of breast cancer/ high cholesterol and asthma, and according to studies they found that breast cancer is more common in women who are infertile or those who were never married or lactated
- 11- The bond between mother and child seems to be enhanced with breastfeeding and it prevents depression in mothers

Now for mothers: (The doctor just read the slides) -__-

- 1- Nursing immediately after delivery causes the uterus to contract (oxytocin hormone is excreted by breastfeeding and induces the uterus to contract in a shorter time; that's why mothers who breastfeed their infants bleed less after delivery than others)
- 2- The uterus of a breastfeeding mother shrinks to its pre-pregnancy size more quickly
- 3- Calories are burned while breastfeeding, approximately 20 calories to produce 1 ounce of milk; which helps the mother to get back to her normal weight.

- 4- Nursing decreases the chances of premenopausal breast cancer. Osteoporosis and cervical cancer are less common in women who are breastfed.
- 5- Return of fertility is delayed; breastfeeding prevents pregnancy after delivery for about 6 weeks, which is the time (after 6 weeks) to have the postnatal care services
- 6- Breastfeeding is more economical than formula feeding specially in developing world in which poverty is high
- 7- Breast milk is always available, clean and in right temperature; and by that mothers feel special satisfaction in knowing that they alone are meeting the nutritional needs of their babies

Finally we finished this issue now moving to

Nutritional statics for mother and children in Jordan(year 2007)

Please refer to slides

Early breastfeeding

- ✓ Provides the newborn with **colostrum**, a key supplement for the infant's immune system.
- ✓ **93%** of infants are ever breastfed, this isn't an indicator & it means nothing; because it includes infants that are even lactated only one time and those who are lactated for one or two months, but if we want a true indicator, we'll study the percentage of infants who are exclusively breastfed, which then reflects whether breastfeeding practice is good or bad in Jordan.
- ✓ **39 %** newborns are breastfed within the first hour of life, we mustn't allow nurses in hospitals to give infants normal glucose with water or formula milk during the first day, instead they have to give the baby for his/her mother for breastfeeding from the first minute of birth.

Duration of breastfeeding

See the figure, the doctor didn't mention anything out of the slides

Any breastfeeding: its duration is one year (12.5 to 13 months)

Exclusive breastfeeding: as we mentioned it's up to 6 months by recommendations (but in Jordan its 0.6 month; so it needs to be more promoted)

Predominant breastfeeding: 1.7 months, also it's not so good; because it's supposed to be exclusive in this duration.

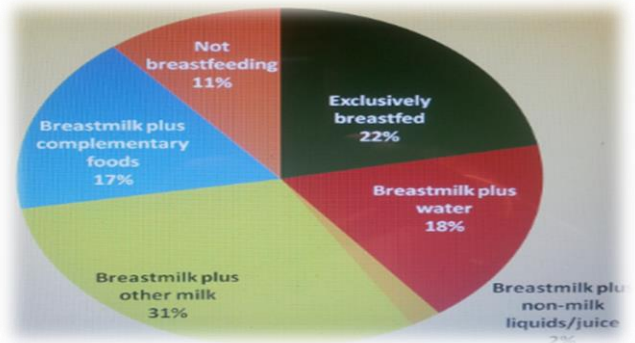
Conclusion: Breastfeeding practice is still poor in Jordan

Exclusive breastfeeding

- The infant receives only breast-milk
- recommended by WHO during the 1st 6 months

Breastfeeding status under 6 months

Again the doctor read these numbers and commented that by promoting breastfeeding, exclusively breastfed should be higher



Exclusive breastfeeding by age:

(< 2 months...39%), (2-3 months... 21%), (4-5 months... 10%), (6-8 months... <1%)

The Dr. didn't say whether to summarize the numbers or not --

Complementary Foods: should be introduced by the age of 6 months, what are the main nutrients that are poor in milk and should be introduced? Iron, Vitamin A & Vitamin C

- 17% of breastfed children under 6 months are already consuming solid food, which is again wrong and not advisable!
- 66% of breastfed children consume solid food after 6 months

IYCF practice (Infant and young child feeding)

It's recommended by WHO, so they promote breastfeeding for 6 months exclusively

Vitamin A and iron intake

Among children الأرقام ليست للحفظ

(From food ... 84%, supplements... 9%) As we mentioned that Vitamin A is very important especially for the **CNS and the eye**.

Given vitamin A supplement in last 6 months is **very low** although it's recommended by WHO.

Among mothers الأرقام ليست للحفظ

Also mothers take iron & vitamin A from food, and during pregnancy 79% of women took iron supplements & after 90 days during pregnancy 50% took too.

Nutritional status of women

BMI <18.5, under-weight..... BMI >25, overweight..... BMI >30, obese

Average BMI (Body Mass Index) is 25

47 % of women are overweight or obese, 49% are normal & 4% are thin

Women with height less than 1.45 m are considered stunted (short), only 1% of women with these heights are found at the reproductive age.

These Rates are Important They took these measurements because they talk about **Jordan population**

Key Findings Always focus on **key findings** they are very important.

Good luck 😊