Nutrition Program

Mead Johnson Nutrition Program
A head start in life, an advantage for their lifetime

Nutrition during pregnancy and breastfeeding

In collaboration with

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Hospital San Juan, Multimedica and Vistahermosa Private Hospitals

- Spain -

The information of this educational program reflects the opinion of the authors, who have complete and independent control over the planning and contents of this presentation. Author's opinions are not necessarily those from Mead Johnson, who has sponsored the program by an educational non-restricted grant.
- For Health Care Professionals only -

In the so-called developed societies, such as our European setting, where Maslow's pyramid reaches its peak in a large part of the population, nutrition should obey the following parameters:

The food to be consumed must be culturally acceptable. This is especially important in the context of a Europe that receives large influxes of migrants resulting in an intense cultural mixture.

It must favour the displacement of the health-illness continuum towards the right.

- The cooking products to be used must be easily accessible, and the foods simple and quick to prepare, in other words, that they are suited to the rapid pace of western life.

During pregnancy and breastfeeding, the aforementioned guidelines acquire special relevance since:

- The pregnant woman and nursing mother has special and increased nutritional requirements.

- The pregnant woman and nursing mother is not only satisfying her desire to have children but is also fulfilling a vital duty of society, which is to replicate. From this perspective, society should, therefore, harbour and protect the reproductive processes of its members, implementing, among other measures, health programs to enhance the health of the mother and of the new member of society, and give special importance to programs aimed at informing about the correct diet during these generation processes. Possibly, the best investment in health that any individual and/or society can make is to adjust their diet to suit their needs.

- The psychological profile of the pregnant woman makes her especially receptive to creating suitable dietary habits. It is a sensitive time of life when we should know how to benefit fully from all the health actors.

- Often, scientific and rational evidence must fight against food-related myths implanted long ago in the cultural subconscious.

Nutrition during pregnancy and breastfeeding

Regime prior to conception

- **A healthy diet for the period before conception (rich in folates):**
  - Favors fecundity
  - Prevents fetal malformations
- **Advice should be given about dietary requirements before conception**
- **↑ the intake of folate-rich foods**
- **↑ the intake of foods that regulate the intestinal flora**

The intake of folates is very important in the period before conception. High levels of homocysteine in the mothers' blood are closely related to cell wall and neural tube defects *(spina bifida)*. Hyperhomocystenemia is also associated with repeated abortions, premature rupture of the ovular membranes and preeclampsia. Taking into consideration that neural tube closure takes place around week six of pregnancy and that the diagnosis of pregnancy is often not certain during the first month, the accepted regime to prevent defects in embryonic closure is to raise the concentration of folates, which then causes plasma homocysteine levels to drop. To do this, it is essential to increase the intake of foods rich in folic acids, at least for two months before the start of pregnancy.

Although we can consume a large proportion of the folic acid we require by following a suitable diet, we must not forget that the main fraction of folates the maternal organism requires is provided by the intestinal flora. Therefore, both before and during pregnancy it is interesting to consume foods that regulate the intestinal flora *(lactobacilli)* and dietary fiber, and to avoid non-selective antibiotics where possible.

These measures are especially important for groups at risk of neural closure defects.

The following foods are rich in folic acids: oats, wholegrain wheat flour, soya, spinach, endive, chard, cabbage, peanuts, almonds, Camembert and Roquefort cheeses, liver (chicken, beef, pork and lamb) and egg yolk.

Weight curve during pregnancy

- **Weight gain during pregnancy: 9 to 12 kg**
  - Fetus at term = 3 - 3.5 kg
  - Ovular and placental membranes = 0.6 kg
  - Amniotic fluid = 0.6 - 0.9 kg
  - ↑ in breast volume = 0.6- 0.8 kg
  - ↑ in uterine mass = 1 kg
  - ↑ in total blood volume= 1.5 kg
  - Water retention = 1 kg
  - Fat accumulation = 0.9 -3 kg
- **Energetic needs:**
  - **Calorie needs ↑ by about 15 percent[1]**
    - + 150 kcal/day during 1st and 2nd trimester
    - + 250 kcal/day during the 3rd trimester

Recommended weight gain for pregnant women

By pre-pregnancy Body Mass Index (BMI) *

Weight-for-height category	Recommended total weight gain
	Kg
Underweight (BMI < 19.8)	12.7 - 18.1
Normal weight (BMI 19.8 to 25)	11.3 - 15.9
Overweight (BMI 26 to 29)	6.8 - 11.3
Obese (BMI > 29)	6.8
Twin gestation (any BMI)	15.9 - 20.4
Triplet gestation (any BMI)	22.7

Adapted from : brown JE, carlson M. Nutrition and multifetal pregnancy J am diet assoc 2000; 00:343-8

Distribution of weight gain over pregnancy:

- From week 0 to week 8: from 1000 to 2000 g.
- From week 9 to 27: from 250 to 350 g/week.
- From week 28 to 38: 400 to 500 g/week.
- From week 28 to 38 (multiple pregnancies) from 500 to 750 g/week.

The maternal weight curve during breastfeeding is very different from that during pregnancy, since during the birth, and afterwards the woman loses weight that was gained during pregnancy except for that corresponding to increased breast volume, which returns to the normal size after breastfeeding.

We should, also, bear in mind, that breastfeeding is a catabolic period (as opposed to the anabolic period of pregnancy, and the mean weight loss attributable to breastfeeding corresponds to around one kilo per month (during exclusive breastfeeding).

Energetic needs:

Appreciatively, an adult woman needs 2000 kcal/day and during pregnancy she needs additional 150 kcal/day during the 1st and 2nd trimester and additional 200 kcal/day during the 3rd trimester.

Healthy eating during pregnancy International Food Information council october 2008.

Nutrition during pregnancy and breastfeeding

Regulator foods (1)

- **Water:**
  - Recommended intake: 2 to 3 liters /day
  - Prevents threats of Premature Childbirth and renal lithiasis
- **Salt:**
  - Moderate intake
  - Enriched with iodine to prevent fetal hyperthyroidism (175 µg/day)
- **Dietary fiber:**
  - Amount recommended during pregnancy 30-35 g/day
  - Prevents caries and gum disease
  - Modulates cholesterol levels
  - Favors calcium absorption
  - Improves and/or prevents constipation

Benefits of abundant water intake during pregnancy:

The uterus is highly sensitive to the state of hydration. Mild maternal dehydration can cause high uterine irritability and, consequently, the risk of preterm birth.
Abundant hydration is the is an important measure in the pregnant women since a well-hydrated skin is more elastic and resistant.

Urinary infections are common during pregnancy, given the physiological immunosuppression during this period, together with the incomplete depletion of the bladder derived from a partial loss of muscle tonicity. An abundant intake of fluids is, therefore, a protective factor against these.

During pregnancy, the ureters are twisted and swollen. Moreover, in our setting pregnant woman often take calcium supplements (and the excess is excreted by the kidneys) and antacids. All this makes her more susceptible to kidney stones, since the altered urinary pH that results from treating heartburn, favors the precipitation of calcium oxalate crystals in the urinary tracts, which, also, have an altered anatomy owing to the pregnancy. An abundant intake of fluids helps to keep the urinary tracts well "rinsed", preventing the calcium oxalate crystals from producing lithiasis.

Iodine intake:

- Hypothyroidism has severe consequences for the psychoneurological development of the fetus (cretinism). This is the main cause, worldwide, of neurological impairment and easily preventable mental retardation.
The soils in some regions, such as Germany, Italy, Spain and other countries in the European Union, have a deficit of iodine, leading to the production of crops with very low levels of this oligoelement.

- In practice:
A quarter of a desert spoon of iodized table salt provides 95 micrograms of iodine.
A 170g portion of sea fish provides 650 micrograms.

When buying salt, it is recommendable to check that it specifies that it is "iodized" on the label.

Nutrition during pregnancy and breastfeeding

Regulator foods (2)

- **Fruit:**
  - Recommended intake a minimum of 3 pieces/day
    - A banana for its potassium, magnesium and zinc contents
    - A citrus fruit for its Vitamin C and provitamin A
    - A third fruit of your choice
- **Vegetables:**
  - Two rations/day of vegetables
  - Generous and varied portions
  - Eat raw if possible
  - Wash well (to prevent toxoplasmosis)

Processing of fruit:

If liquidized, do not discard the pulp (dietary fiber) and consume immediately to prevent oxidation or alteration by light.

Processing or cooking of vegetables:

If vegetables are cooked, use little water, cover with a lid, and cook for a short time only.

When baking, wrap first in foil to conserve the nutrients.

Do not discard the darker-colored leaves as these tend to be richest in oligoelements.

Don't chop vegetables too small as this reduces their nutritional properties.

Nutrition during pregnancy and breastfeeding

Energy foods (1)

- **Carbohydrates:**
  - Glucose is the main energy source for the mother
  - Glucose is the only energy source for the fetus
  - At least 300 g/day
  - Divided into 6 portions
  - Prevent the nausea caused by ketosis
  - The pregnant woman should do moderate physical exercise (e.g. go for walks), usually after the main meals

- **To correct tendency towards postprandial hyperglycemia or towards preprandial hypoglycemia:**
  - Unrefined types are recommended
  - Complex sugars can be eaten

It is interesting to take into account, especially because it is the basis of the complex metabolic regulation of glycids during pregnancy, that the maternal organism has a certain peripheral resistance to the action of insulin, derived from the action of hormones with a diabetogenic action, such as: prolactin, estrogens, progesterone, cortisol, but, especially placentary lactogen. At the same time, there is also increased breakdown of insulin, mainly by the action of hepatic and placentary insulinases. This hormonal environment in the maternal organism is an adaptive mechanism that favors and enhances fetal intake, but, as a result of the increase of glucose in the blood, the maternal pancreas tries to counteract the situation with a hyperinsulinism. The ultimate result of this complex situation is that raised postprandial glycemias in the pregnant woman are more intense than in the general population. But, consequently, there is an intense release of insulin, with a subsequent fasting hypoglycemia. To summarize and simplify the situation, the pregnant woman has a tendency towards postprandial hyperglycemia and also to fasting hypoglycemia.

To correct this tendency of the pregnant woman towards hyper and hypoglycemia, the best carbohydrates to take are complex and unrefined, such as those present in pulses, cereal, potatoes and other tubers, pastas, and bread, etc. since these are absorbed more slowly and produce a more gradual but more prolonged glycemia than simple and refined carbohydrates. Moreover, being wholegrain they provide more oligoelements and dietary fiber.

On the scope of the cares required during pregnancy, we must not forget the need for physical activity, which is an essential part of any action protocol for pregnant women of normal gestation. Given the close association between the glycid metabolism and muscular activity, the most important time to carry out physical activity during pregnancy is after the main meals, to reduce the tendency towards hyperglycemia at these times. By contrast, it is inadvisable to do intense physical activity around three or four hours after the last meal, since this is when the pregnant woman is most likely to become hyperglycemic.

Nutrition during pregnancy and breastfeeding

Energy foods (2)

- **Fats:**
  - These have energy, regulator and plastic functions
  - They should provide from 30-35% of the daily calories consumed
  - The diet should include more unsaturated than saturated fats:
    - **Saturated: < 10% of calorie intake**
    - **Monounsaturated (oleic acid): 15 – 20% of calorie intake**
    - **Polyunsaturated (linoleic and linolenic acid): 7% of calorie intake**

The functions of fats in the maternal organism:

- They are an important energy reserve accumulated during pregnancy to be used during breastfeeding.
- They help to regulate the body temperature.
- They cover the organs, protecting them from traumatisms (e.g. kidneys).
- They transport liposoluble vitamins (A, D, K and E). They are all essential for the health of the fetus, mother and infant.
- They are essential to regulate the hormonal atmosphere of the mother, fetus and child, since they constitute the steroidal hormones.
- The fats consumed with the diet are the source of long chain essential fatty acids: linoleic and linolenic acids.

Nutrition during pregnancy and breastfeeding

Energy foods (3)

- **Benefits of linolenic and linoleic fatty acids (omega 3 and 6) in the fetus and breastfed infant:**
  - They are involved in the production of nervous tissue
    - **15% of the brain is composed of docosahexaenoic acid (DHA), that comes from alpha-linolenic acid**
    - **10% of the brain is composed of arachidonic acid, from linoleic acid**
  - They are involved in the production and transmission of neuronal stimuli
  - Fetuses and breast-fed infants with higher levels of Omegas 3 and 6 improve their future capacity for concentration and learning

Benefits of linolenic and linoleic fatty acids (omega 3 and 6) in the fetus and breastfed infant:

They are involved in the production of nervous tissue:

- 15% of the brain is composed of docosahexaenoic acid (DHA), that comes from alpha-linolenic acid.

- 10% of the brain is composed of arachidonic acid, from linoleic acid.

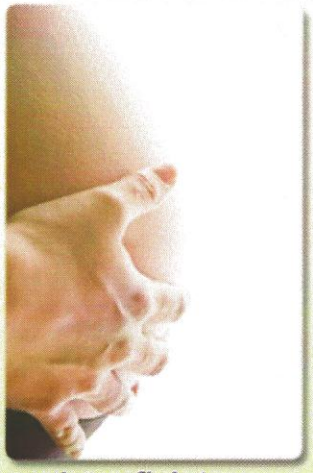
They are involved in the production and transmission of neuronal stimuli.

Fetuses and breast-fed infants with higher levels of Omegas 3 and 6 improve their future capacity for concentration and learning.

Nutrition during pregnancy and breastfeeding

Energy foods (4)

- **The benefits of linolenic and linoleic acids (omega 3 and 6) in pregnant woman and postpartum[4]:**
  - They may reduce the risk of preeclampsia[1]
  - They may reduce the risk of postpartum depression[2]
  - They may reduce the risk of threats of premature birth[3]
  - They influence infant visual function and neurodevelopment[4]



- **Pregnant woman should avoid frequent intake of large predator fish to prevent the risks of methyl-mercury intoxication.**

Pregnant women receive contradictory advice. On the one hand, they are told to eat oily fish for its high Omega 3 contents, which helps a desirable fetal neurological development. On the other hand, they are told not to eat too large amounts of this same kind of fish to avoid an excess intake of methyl-mercury that could increase the risk of premature birth and neurological deterioration of the fetus. In fact, an informative message of the European Community, from the Public Health Department published in Brussels on 12 May 2004, warned of the risks of consuming methyl-mercury in fish by vulnerable groups of individuals, such as pregnant or breastfeeding women and young children.

Faced with this dilemma, the need to consume Omega 3 fatty acids for a correct fetal and child neurological development, but, also the risks of consuming methyl-mercury in fish, we suggest following the recommendation made in the Viva project, published by Harvard University in 2004: "Women should continue to eat fish during pregnancy but should choose kinds with lower mercury contents", in other words, they should avoid large predators such as tuna or swordfish.

1.- Guttorm Haugena, Ingrid Hellandb Influence of Preeclampsia or Maternal Intake of Omega-3 Fatty Acids on the Vasoactive Effect of Prostaglandin F-Two-Alpha in Human Umbilical Arteries International Journal of Gynecology and Obstetrics 2007.

3.- Frangou S, Lewis M, Mccrone P. Efficacy of ethyl-eicosapentaenoic acid in bipolar depression: randomised doublé-blind paceblo-controlled study. Brithis Journal of psychiatry 2006; 188: 46-50.

4.- Olsen SF and SECHER, Low consumption of seafood in early pregnancy as a risk factor for preterm birth: Prospective cohort study. British Medical Journal, February, 23,2002; 324: 447-450.

5. Jensen CL, Effects of n-3 fatty acids during pregnancy and lactation. Am J Clin Nutr. 2006 Jun;83(6 Suppl) : 1452S-1457S.

Nutrition during pregnancy and breastfeeding

Vitamins

- **Vitamin D**
  - Additional intake recommended for vegans, women under 25 years old and for those who do not consume dairy products
- **Vitamin A**
  - should be taken in correct amounts (less than 2,000 IU) as an excess would lead to abnormalities in the baby, just like how a deficiency would[1]
- **Vitamin B6**
  - no evidence of vitamin B6 supplementation in pregnancy[2]
- **Vitamin B12**
  - Needs usually cover by foods (from meat), Additional intake recommended for vegans, vegetarians and women who do not eat meat
- **Vitamin C**
  - Having a low intake of vitamin C may be associated with complications in pregnancy such as pre-eclampsia, anemia and having a small baby but there is no clinical evidence and more research is needed[3]

	RNI for pregnant women
Vitamin D (µg/day)	5
Vitamin A* (µg RE/day)	800
Vitamin B6 (µg/day)	1.9
Vitamin B12 (µg/day)	2.6
Vitamin C (mg/day)	55

RNI : Recommended Nutritional Intakes
* : Vitamin A values are "recommended safe intakes" instead of RNIs

Adapted from : Vitamin and mineral requirements in human nutrition : report of a joint FAO/WHO expert consultation, Bangkok, Thailand, 21–30 September 1998.

Recommended safe intakes as mg retinol equivalent (RE)/day; conversion factors are as follows:

- 1mg retinol = 1 RE
- 1mg b-carotene = 0.167mg RE
- 1mg other provitamin A carotenoids = 0.084mg RE.

1. Centre de Recherche et d'Information Nutritionnelles Nutrition for the pregnant woman. Recommendations and practical advice Revue des Sages Femmes. 2000 Sep;(16):23-33.
2. haver D, Saeed MA, Bhutta ZA. Pyridoxine (vitamin B6) supplementation in pregnancy.Cochrane Database of Systematic Reviews 2006, Issue 2. Art. No.: CD000179. DOI: 10.1002/14651858.CD000179.pub2
3. Rumbold A, Crowther CA. Vitamin C supplementation in pregnancy. Cochrane Database of Systematic Reviews 2005, Issue 1. Art. No.: CD004072. DOI: 10.1002/14651858.CD004072.pub2

Nutrition during pregnancy and breastfeeding

Foods with plasticity functions (proteins)

- **These have functions of plasticity, as regulators, protective functions and also of transport**
- **Increased requirements during pregnancy and breastfeeding**
  - Additional intake of 5 grams/day from week 12 of pregnancy
- **Mainly foods with a high protein value**
  - Milk products: 4 rations/day
  - Meat, egg or fish: 2 rations/day
    - **Avoid contagion by Toxoplasma Gondii**
    - **Avoid contagion by anisakis**
  - Pulses, rice, pasta, potatoes: 2 to 4 rations/week
  - Combine legumes in one dish with cereals or tubers

Equivalences and processing/cooking of protein foods:

- **Dairy products**: one ration is equivalent to one glass of milk, 2 yoghurts or 2 petit swiss, 80 g fresh cheese or 40 g cured cheese.

It is recommendable to consume semi-skimmed mild to avoid an excess of saturated fats or calories, but to also transport the liposoluble vitamins. Dairy products guarantee the necessary intake of calcium for fetal bone mineralization.

- **Meat, fish or egg**: one ration corresponds to 120 grams of meat or 140 grams of fish or 2 eggs.

Meat should be well cooked to avoid toxoplasmosis. The toxoplasm is destroyed at 72° C.

If the pregnant woman is anemic, we recommend that she take more red meat in the diet. If she has an above average weight gain we recommend she increase the proportion of white meat without the skin.

Fish should be eaten frequently during pregnancy and breastfeeding because of the quality of its proteins and its omega 3 and 6 contents, but we should take into account the recommendations given above to avoid a high consumption of methyl-mercury.

Another precaution to take into account when preparing fish dishes is to avoid fish infested with the nematode Anisakis. To do this, it is necessary to avoid eating raw or partially cooked fish, including home-made preparations of fish in vinegar, smoked, in brine, or undercooked grilled or microwaved fish. The larvae in the infested fish die when the fish is cooked at 60°C for at least 10 minutes. The larvae are also destroyed by freezing for at least 24 hours below -20°C. The frozen or ultrafrozen fish at high sea, which has been immediately gutted, has little chance of being parasitized.

- **Pulses, rice, pasta or potatoes**: It is beneficial to combine pulses with cereals or tubers together in one dish, in order to increase the quality of the protein.

Nutrition during pregnancy and breastfeeding

Digestives disorders during pregnancy

- **Nausea or vomiting**
  - The management of nausea and vomiting of pregnancy depends on the severity of the symptoms → preferable to start with dietary changes.
  - Vit B6 appears to be effective in reducing the severity of nausea[1].
- **Constipation**
  - About 30 to 40 percent of pregnant women get constipated at some point.
  - In general, worry, anxiety, minimal physical exercise, iron-supplementation and a low-fiber diet may cause constipation.
- **Heartburn or acid indigestion or acid reflux**
  - Usually occurred in the second half of pregnancy[2].
- **Increased hunger or decreased appetite**

Management of Nausea or vomiting : Advice to give to pregnant women:
- At time of wake up, advice to eat a few crackers and then to rest for 15 minutes before getting out of bed.
- Get up slowly and do not lie down right after eating.
- Eat small meals or snacks often so the stomach does not become empty (for example, every 2 hours). Women should try not to skip meals.
- Women should not hesitate to eat whatever they feel like eating and eat whenever they want to. However, it is best to avoid cooking or eating spicy, fatty and fried foods.
- If cooking odours bother the pregnant woman, advice to open the windows and turn on the stove fan. If possible, someone else can cook the meals.
- Advice to eat cold food instead of hot (cold food may not smell as strong as hot food).
- Sniffing lemons or ginger can sometimes relieve an upset stomach.
- Eating salty potato chips can help settle the stomach enough to eat a meal.

Jewell D, Young G. Interventions for nausea and vomiting in early pregnancy. Cochrane Database of Systematic Reviews 2003, Issue 4. Art. No.: CD000145. DOI: 10.1002/14651858.CD000145.

Management of Constipation
- Advice to eat high-fibre foods such as wholegrain cereals, wholegrain bread, and fresh fruits and vegetables every day.
- Drink water or fruit juice.
- Exercise.

Management of heartburn or acid indigestioon or reflux:
- Eating large meals should be avoided.
- Drinking and eating at the same time should be avoided.
- Eating fatty or spicy foods should be avoided.
- Chewing-up can help in neutralizing stomach acid by stimulating saliva production.
- Wear loose-fitting clothes.

Pregnant women should not lie down after eating.

2. American College of Gastroenterology. «Tips To Ease The Heartburn Of Pregnancy.»ScienceDaily 10 December 2007. 10 December 2008 <http://www.sciencedaily.com/releases/2007/12/071208145406.htm>.

Nutrition during pregnancy and breastfeeding

Breastfeeding

- **Breastmilk composition versus cow's milk**
  - Highly complex, contains over 100000 unique biological components: proteins, lipids, carbohydrates, vitamins & minerals…
- **Physiology**
  - Infant sucking at the breast caused prolactin secretion[1]
  - Oxytocin acts on the breast to produce milk ejection[1]
- **WHO-UNICEF recommendations[2]**
  - Exclusive breastfeeding during the first 6 months of the baby and pursue breastfeeding in complement with solid food until 2 years of age or more

	Human milk	Cow's milk
kcal/dl	60 - 70	65 - 75
Protéins (g/dl)	0.8 - 1.2	3 - 3.5
Casein	40	80
Soluble-proteins	60	20
Lipids (g/dl)	3 - 4	3.5
Linolenic acid (mg/dl)	350	90
Alpha linoléic acid (mg/dl)	37	trace
Carbohydrates (g/dl)	7 - 8	4.5 - 5
Lactos (%)	85 - 90	100
Oligosaccharids (%)	10 - 15	10
Dextrin-maltos (%)	0	0

Breastmilk components:
Physiology
- Prolactin : Prolactin acts on the human breast to produce milk.
- Oxytocin is produced and realease in anintermittent manner and stimulated by sucking at the breast which stiulates neurohypophysis

Other hormones necessary for the production of breast milk include: insulin, cortisol, thyroid hormone, parathyroid hormone, parathyroid hormone-related protein, and human growth hormone.

1. Lawrence RA and Lawrence RM. Breastfeeding, A Guide for the Medical Profession, 6th Ed. Elsevier Mosby, Phila, PA. 2005;73-86

WHO-UNICEF recommendations
- Have a written breastfeeding policy that is regularly communicated to all health care staff;
- Train all staff in skills necessary to implement this policy;
- Inform all pregnant women about the benefits and management of breastfeeding;
- Help mothers initiate breastfeeding within half an hour of birth;
- Show mothers how to breastfeed and how to sustain lactation, even if they should be separated from their infants;
- Feed newborn infants nothing but breastmilk, unless medically indicated, and under no circumstances provide breastmilk substitutes, feeding bottles, or pacifiers free of charge or at low cost;
- Practice rooming-in which allows mothers and infants to remain together 24 hours a day;
- Encourage breastfeeding on demand;
- Give no artificial pacifiers to breastfeeding infants;
- Help start breastfeeding support groups and refer mothers to them.

2. UNICEF. (1992) «The Global Criteria for the WHO/UNICEF Baby-Friendly Hospital Initiative.» New York.

Nutrition during pregnancy and breastfeeding

Nutrition during breastfeeding

- **While breastfeeding, the mother should follow the same diet as when she is pregnant.**
- **Exceptions:**
  - Energy intake are ↑ of 450 kcal instead of 285 kcal/d
  - ↑ intake of iodine
  - The intake of fiber can be ↓
  - ↓ Iron needs
  - Minimum intake of 3 liters of water/day.
  - The period of exclusive breastfeeding is catabolic:
    - **Mean weight loss: 1 kg/month**
- **Natural breastfeeding is the best food the baby can have**
- **Prolonged natural breastfeeding may reduce breast cancer***

While breastfeeding, the mother should follow the same diet as when she is pregnant.

Exceptions:

- Energy intake are increased of 450 kcal instead of 285 kcal/d.
- Iron needs are lower: 10 mg/d.
- Increase the intake of iodine to 200 mcg/day instead of 150 mcg/d for the normal and pregnant woman.
- The intake of fiber can be reduced to: 25-30 g/day.
  She will feel thirstier: she must satisfy her body's water requirements, ensuring a minimum intake of 2-3 liters/day.

The period of exclusive breastfeeding is catabolic:

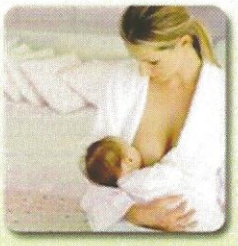
- Mean weight loss: 1 kg/month.
- Natural breastfeeding is the best food the baby can have.
- Prolonged natural breastfeeding may reduce breast cancer*.

**Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. Lancet 2002; 360: 203-10.*

Nutrition during pregnancy and breastfeeding

Breast Milk practical aspects

- **Start natural breast milk in an early stage** (if it is possible start in the Hospital)
- **Free Lactation** (no duration and/or frequency limits)
- **To control the correct position during the feeding time:**
  - Baby´s mouth including areola (not only the nipple)
  - Mother´s nipple should be lightly oriented to the baby´s palate



Breast Milk practical aspects:

Start natural breast milk in an early stage (if it is possible start in the Hospital).

Do not give food supplements (except by HCP prescription).

Free Lactation (no duration and/or frequency limits).

To control the correct position during the feeding time:

Baby's mouth including areola (not only the nipple).

Mother's nipple should be lightly oriented to the baby´s palate.

Exclusive Breast Milk until 6 months of life.

Nutrition during pregnancy and breastfeeding

Mother´s Breast Milk benefits - health benefits

- **Short term, reduce risk of:**
  - puerperal metrorragy
  - anemia
- **Medium term**
  - Help to pre-conceptional weight recuperation
  - Long time Amenorrhea (iron save, facilitate the intergenesic spacement)
- **Long term, reduction of:**
  - breast cancer risk*
  - ovary cancer risk
  - osteoporotic risk

*Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. Lancet 2002; 360: 203-10.

Nutrition during pregnancy and breastfeeding

Breast Milk benefits for the baby

- Reduce risk of mortality by neonatal necrotizing enterocolitis and by sudden death
- Reduce morbidity by gastrointestinal, respiratory, urinaries and sinusitis infections
- Reduce risk of overweight and obesity (present and future)
- Promote adecuate jawbone development and the others mouth´s structures
- Promote immunity
- Reduce risk of common allergic illness

*Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. Lancet 2002; 360: 203-10.

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