

Nutrition During Pregnancy and Lactation



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Pregnancy and lactation place large demands upon the body and, ideally, women should receive optimal nutrition to cope with such demands.

Importance of good nutrition during pregnancy

- **A well nourish woman prior to conception enters pregnancy with reserve of several nutrients that meets the needs of the growing fetus without affecting her own health.**
- **A well-nourished woman suffers fewer complication during pregnancy and there are few chances of premature births.**



- **Maternal diet during pregnancy has a direct influence on fetal growth, size and health of the newborn.**
- **Poor nutrition during pregnancy increases the risk of complications such as prolonged labor and even death.**
- **Pregnant women who receive inadequate nutrient experience greater maternal morbidity and have a higher risk of poor pregnancy outcome (e.g. premature birth, miscarriage).**



- **Inadequate diet during pregnancy affects the health of the baby during early infancy.**
 - **If the infants survive they develop nutritional disease like anemia, rickets etc.**
- May suffer from infectious diseases due to lack of good immunity.**



The term 'maternal nutrition' focuses attention on women as mothers, on their nutritional status as it relates to bearing and development of children.

Maternal nutrition comprises anthropometric factors such as pre-pregnancy weight for height and gestational weight gain, as well as intake of protein and micronutrients.



Objectives of Maternal Nutrition

- **To produce, healthy, normal weight infants while minimizing health risks to the mother.**
- **To determine appropriate weight gain during pregnancy for normal, under and overweight women.**
- **To recognize the additional energy, vitamin and mineral requirements for women during pregnancy.**
- **To understand changing nutritional needs during pregnancy**



Factors Affecting Maternal Nutrition

1- General nutritional status prior to pregnancy

2- Maternal age

3- Maternal parity

4- Cultural and psychological factors

5-Lactation

6- Weight gain during pregnancy

7- Metabolic and other complications during pregnancy



Increased Nutritional Risk

- **Pregnant women who are:**
 - **Drug or alcohol abusers**
 - **Vegetarians**
 - **Smokers**
 - **Anorexic or bulimic, underweight, or obese**
- **Pregnant women with:**
 - **Hyperemesis**
 - **Poor weight gain or weight loss**
 - **Dehydration, constipation**
 - **Pre-existing medical conditions**



- **Low pre-pregnancy weight and low maternal weight gain are risk factors for:**

- **Intrauterine growth retardation**
- **Low birth weight baby**
- **Increased incidence of perinatal death**

Pre-term birth doubles when 3rd trimester weight gain is low or inadequate.

Need to asses:

- **Pre-pregnancy weight (BMI)**
- **Current weight (BMI)**
- **Weight gain from previous visit**



WHO recommendations :

1-Counselling about healthy eating and keeping physically active during pregnancy is recommended for pregnant women to stay healthy and to prevent excessive weight gain during pregnancy.

2-In undernourished populations, nutrition education on increasing daily energy and protein intake is recommended for pregnant women to reduce the risk of low-birth-weight neonates



Maternal Weight Gain

- **No optimal weight gain recommendation fits every woman.**
- **Recommendation are cited in terms of range and are based of RDA.**

Optimal Weight Gain

- ✓ **Personalized approach is best depending on patient's Ht, pre pregnancy Wt., bone structure, activity level.**
- ✓ **usual 25-35-pound wt. gain.**
- ✓ **stored fat 4 lbs.**



- ✓ **1st trimester 2-5 pound**
- ✓ **2nd trimester $\frac{3}{4}$ -1 pound per week.**
- ✓ **3rd trimester 1 pound per week.**
- ✓ **The emphasis is on a gradual & consistent pattern in wt. gain.**

✓ **Sudden sharp increase weight gain of 3-5 lb. in one week may indicate excessive fluid retention.**

✓ **Inadequate gain = less than 1kg per month during 1st & 2nd trimester**

✓ **Excessive gain = greater than 3kg per month.**



Recommended Weight Gain

| BMI Weight (kg) Height (m²) | Weight Gain (kg) |
|---|-------------------------|
| Underweight BMI < 18.5 | 12.7-18.2 |
| Normal Weight BMI 19-24.9 | 11.4 -15.9 |
| Overweight BMI 25-29.9 | 6.8 -11.4 |
| Obese BMI > 30.0 | 6.8 |



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Tips to Increase Weight Gain

Eat often

Growing babies mean less room for the stomach to expand. Eating more often can compensate for smaller meals.

Drink in some calories

Water takes up the same amount of room in the stomach as fruit juice or milk. Fruit smoothies and milkshakes are great sources of calories.

Choose high fiber foods

Preventing constipation can help appetite. Fruits, vegetables, whole grains, beans and cereals are good fiber choices.

Choose nutrient dense snacks

Peanut butter, nuts, cheese, dried fruit, and yogurt are a few good choices.



Nutritional Needs During Pregnancy

Energy: Most pregnant women will probably need a total of 2,200 to 2,900 kcals per day.

- An additional 300 kcal/day may be required in the 2nd and 3rd trimesters
- Nutrient-dense foods are essential in order to obtain sufficient nutrients

Women, even obese women, should not decrease their calorie intake during pregnancy.

- If energy needs are not met, the protein the pregnant woman consumes will be used to meet her caloric requirements.

If protein intake is not adequate, the mother's muscle stores may be utilized to provide needed calories.



Protein:

- **Protein needs during pregnancy are variable, increasing as pregnancy progresses.**
- **The greatest demand for protein occurs during the second and third trimesters.**
- **Pregnant woman require 60g daily , half of requirement can be met with adding 4 cups of milk daily.**
- **Good sources of protein include lean meats, poultry and fish. These sources also supply other necessary nutrients, such as iron, B vitamins, and trace minerals.**
- **Other high-protein foods include dry beans, lentils, nuts, eggs and cheese.**



In undernourished populations, high-protein supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes

Fat The mother must include enough fat in her diet to meet the needs of her growing baby.

- ❖ **There are no separate RDA for fat intake during pregnancy and the recommendations remain 20-35% of total calories.**
- ❖ **Limit saturated fat, avoid trans fats**
- ❖ **Fats are more completely absorbed during pregnancy causing marked ↑ in S. lipids & cholesterol.**

The EFAs linoleic acid (omega-6) and linolenic acid (omega-3) are necessary for optimal formation of the brain and eyes. RDA: Omega-6 13 g/day and 1.4 g/day omega-3

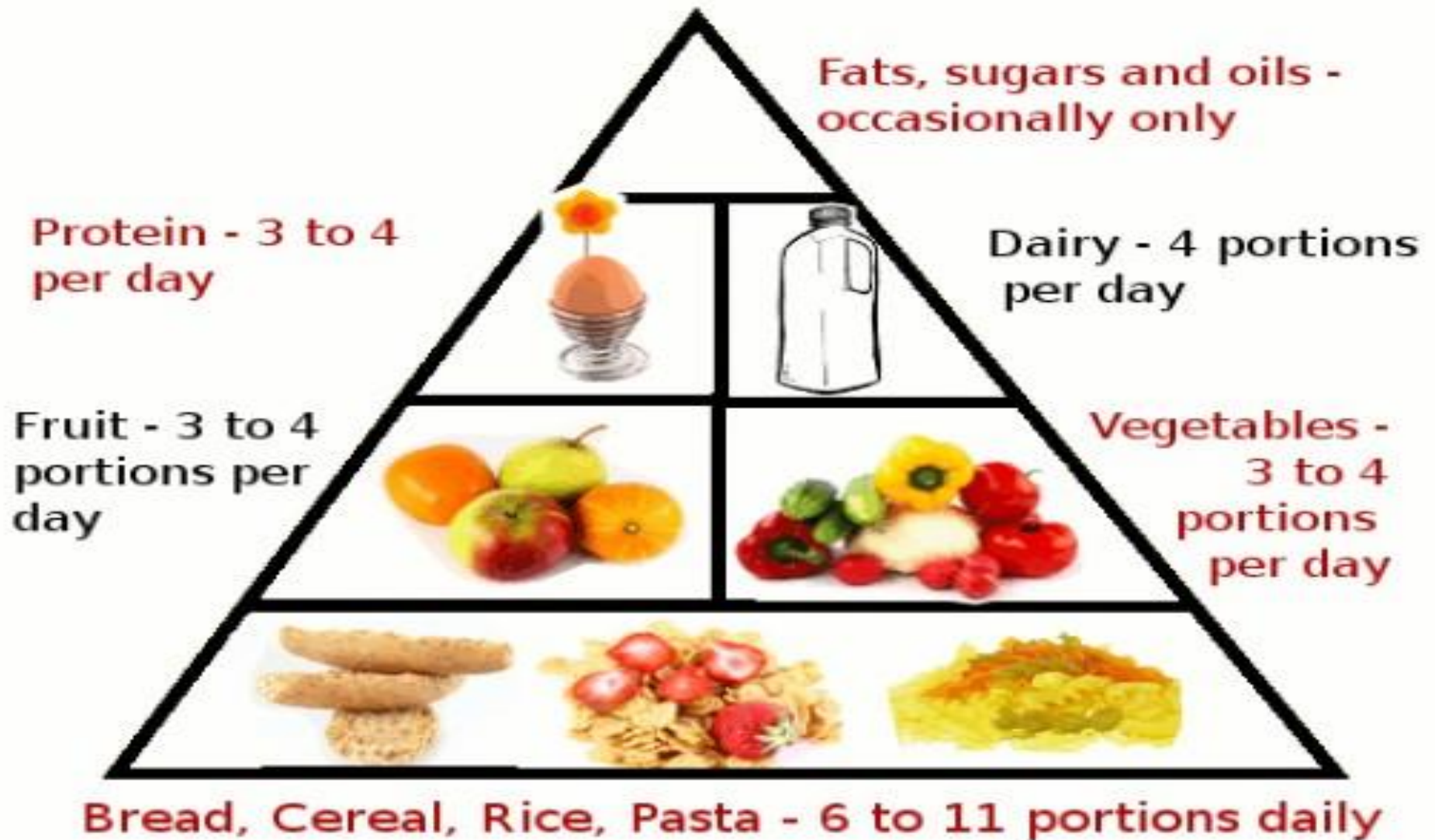


Daily food portions should be increase to include:

- ☹ **6-11 serving of breads & other whole grains**
- ☹ **3-5 servings of veg**
- ☹ **2-4 servings of fruit**
- ☹ **4-6 servings of milk & milk products**
- ☹ **3-4 servings of meat & protein food**
- ☹ **6-8 large glasses of water , and limit soft drinks or coffee to no more than 1 cup Per day**



Pregnancy Food Pyramid



Criteria for a Healthy Prenatal Diet

- Provides adequate calories for appropriate weight gain
- Is well-balanced and follows (My Plate)
- Tastes good and is enjoyable to eat
- Spaces eating at intervals throughout the day

- Provides adequate amounts of high fiber foods

- Includes 8 cups of fluid daily
- Limits beverages that contain caffeine (2-3 servings or fewer daily)
- Has moderate amounts of fat, saturated fat, cholesterol, sugar and sodium
- Stable and continuous food supply





Your Daily MyPlate

| | | | | |
|------------------|------------|------------|---------|------------|
| BREAKFAST | Dairy | Fruits | Protein | Grains |
| SNACK | Dairy | Fruits | | |
| LUNCH | Fruits | Protein | Grains | Vegetables |
| SNACK | Dairy | Vegetables | | |
| DINNER | Vegetables | Protein | Grains | |



Micronutrients

The micronutrients that are most critical during pregnancy include

folate

vitamin B₁₂

vitamin C

vitamin A

vitamin D

calcium

iron

zinc

sodium

iodine



Deficiencies in micronutrients might cause

- **Maternal mortality and morbidity**
- **Neural tube defects in new borns**
- **Prematurity, low birth weight and impaired cognitive development in new borns**



Folate

- **600mcg/day for pregnant women**

Vitamin B12

- **2.6mg/day during pregnancy**



Vitamin C

- **85 mg/day during pregnancy**
- **Deficiency results in infections, preterm births**



Vitamin A

- Needs increase by 10% in pregnancy
- Excess vitamin A can cause abnormalities in fetal kidneys and nervous system

Vitamin A supplementation is only recommended for pregnant women in areas where vitamin A deficiency is a severe public health problem, to prevent night blindness.



Vitamin D

- **Needs does not increase during pregnancy**
- **Excessive vitamin D can cause developmental disabilities in newborns**
- **Vitamin D supplementation is not recommended for pregnant women to improve maternal and perinatal outcomes.**

Zinc

- **Critical for making proteins, DNA, RNA**
- **Need increases 38% during pregnancy, 11mg /day.**



Calcium

- 1000mg/day, same as for non pregnant women
- Pregnant women absorb calcium better

Dietary sources

- Milk, yogurt (8 Oz), cheese (1 oz) ~ 300 mg calcium
- Orange juice- fortified (1 cup = 300 mg)



In populations with low dietary calcium intake, daily calcium supplementation (1.5–2.0 g oral elemental calcium) is recommended for pregnant women to reduce the risk of pre-eclampsia.



Iron:

During pregnancy the plasma volume increases by 50% and RBC volume increases only by 20-30%.

Anemia during pregnancy often caused by low iron stores. Also could be due to poor intake of nutrients aiding utilization and absorption of iron ;such as vit c, B6,12 , Folic acid ,zinc.

- **Fetal need for iron increases in 3rd trimester**
- **Fetus will take iron from mother causing **iron-deficient anemia****
- **RDA 30mg / day supplements are often necessary during 2nd & 3rd tri**



WHO recommendations

Daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental iron and 400 μ g (0.4 mg) of folic acid is recommended for pregnant women to prevent

Maternal anemia

Puerperal sepsis

Low birth weight

Preterm birth .



Intermittent oral iron and folic acid supplementation with 120 mg of elemental iron and 2800 µg (2.8 mg) of folic acid once weekly is recommended for pregnant women to improve maternal and neonatal outcomes if daily iron is not acceptable due to side-effects, and in populations with an anemia prevalence among pregnant women of less than 20%.

Vitamin C enhances iron absorption from plant sources whereas calcium can block iron absorption.

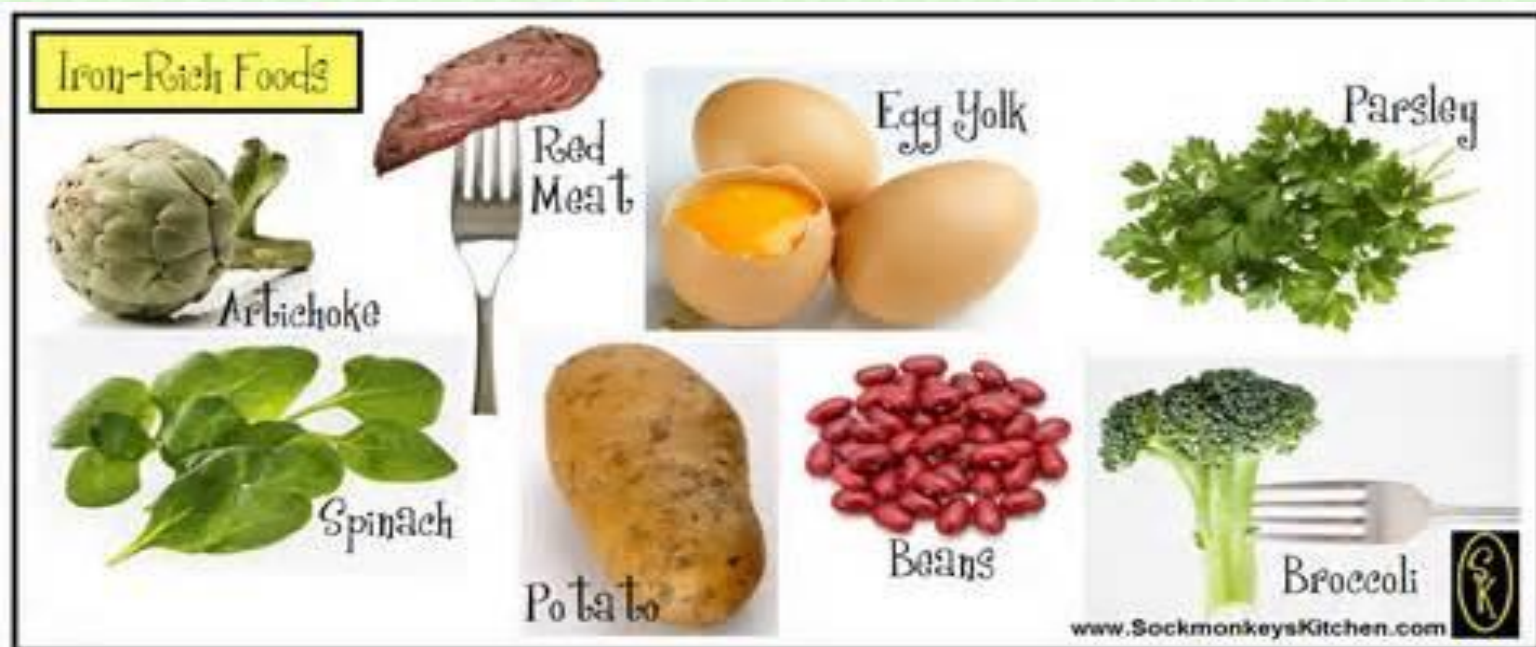
For this reason calcium and iron should not be taken together.

A good practice is to take supplements with iron in the morning and supplements with calcium at night.



Iron-rich foods:

- ❖ Meat, fish, poultry, eggs
- ❖ Organ meats
- ❖ Peas and beans
- ❖ Dried fruit
- ❖ Whole grain and enriched cereal



Sodium

- **1500 mg/day, same as for non pregnant women**

Iodine

- **Need for iodine increases significantly**
- **The RDA for iodine during pregnancy is 220 μg per day and 290 μg per day during lactation.**
- **The need can be obtained from iodized salt**



Supplementation of vitamins and minerals

During pregnancy, there is increased needs for certain vitamins and minerals. Mothers need to consume enough nutrients to meet their increased needs as well as those of their growing baby.

A pregnant woman can get most of the nutrients she needs by making healthful choices using My Plate with the exception of iron and possibly folic acid.



Most doctors recommended that pregnant women take a vitamin and mineral supplement every day.

Prenatal formulations have the appropriate amount and balance of nutrients needed during pregnancy.

Prenatal vitamins are most effective when taken with water or juice.

Taking vitamin supplements with milk, tea or coffee can reduce iron absorption.



Foods To Avoid During Pregnancy

- ✓ **Undercooked meat, poultry. Cook thoroughly to kill bacteria.**
- ✓ **Soft-scrambled eggs and all foods made with raw or lightly cooked eggs.**
- ✓ **Soft cheeses made with unpasteurized milk**
- ✓ **Herbal supplements and teas.**



Fluids During Pregnancy

The need for fluids increases to 3 liters per day for

- **Increase in the mother's blood volume**
- **Regulating body temperature**
- **Production of **amniotic fluid** to protect and cushion the fetus**
- **Combat fluid retention and constipation**
- **Prevent urinary tract infections**



Nutrition-Related Concerns

Nutrition-related problems during pregnancy can include

- **Morning sickness**
- **Cravings and dislikes**
- **Heartburn**
- **Constipation and hemorrhoids**
- **Gestational diabetes**
- **Preeclampsia**

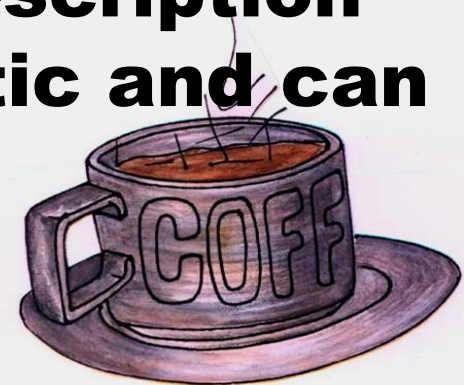
Other nutrition concern are

- **Dieting**
- **Caffeine**
- **Exercise**



- **Caffeine is a stimulant that crosses the placenta and reaches the fetus.**
- **One to two cups of coffee per day is very likely causing no harm.**
- **Greater than two cups of coffee may slightly increase the risk of miscarriage and low birth weight.**

Caffeine is found in colas, coffee, tea, chocolate, cocoa, energy drinks and some over-the-counter and prescription drugs. Caffeine is also a diuretic and can deprive the body of water.



Exercise

Exercise during pregnancy

- **Keeps a woman physically fit**
- **Is a great mood booster**
- **Helps compensate for an increased appetite**
- **Helps keep blood pressure down**
- **Makes it easier to lose weight after the pregnancy**



Essential Maternal Nutrition Actions

- **Adequate food intake during pregnancy & lactation**
- **Adequate micronutrient intake during pregnancy**
- **Birth spacing of 3 years or longer**



Nutritional requirement for lactating mothers

Lactation is nutritionally demanding for mothers who breast feed their babies.

Adequate diet is especially important to help ensure maternal health and to supply her with the energy necessary to care for the new baby.



In addition, postpartum nutrition advice should emphasize on :

- **Replenishing nutrient stores**
- **Returning to a healthful weight**
- **Preventing problems in subsequent pregnancies**
- **Reducing the risk of chronic disease later in life.**



Calorie recommendations — The total number of calories a woman needs depends upon the following factors:

- **Weight during pregnancy**
- **Age**
- **Height**
- **Activity level**



To provide adequate nutrition for her baby while protecting her own nutrition status.

- **A breastfeeding mother must choose a varied, healthful, nutrient-dense diet.**
- **Her nutrient needs are higher or the same as pregnancy with the exception of folic acid, niacin, magnesium and iron where the requirements are lower. Need for protein during lactation is 25 g/day more than woman's average need.**
- **Unless physical activity is reduced, breastfeeding women need about 500 more calories per day over pre-pregnancy energy needs.**



Weight Control

- **Many new mothers are concerned about losing their pregnancy weight.**
- **Postpartum weight loss rate varies with each individual, but in general most new mothers can expect to lose 10 to 12 pounds at delivery.**
- **The rest of the weight should be lost gradually by means of a balanced diet and regular physical activity.**
- **Weight loss of no more than 1 to 2 pounds a week should be encouraged.**

It is important to remind all mothers to be patient and encourage slow, gradual weight loss.



Fluid intake — The average woman who breastfeeds exclusively produces 750 to 800 ml of breast milk per day.

About 3 L/day of water, juices, milk, and soup contribute to necessary fluids.

It is generally sufficient for a woman to drink when she is thirsty and to watch for early signs that she is not getting enough fluids (e.g., dark-colored urine, infrequent urination, dry mouth).



To encourage an adequate fluid intake, some clinicians recommend keeping a cup of water or another non-caffeinated beverage nearby while nursing or working.

