Nutrition During Pregnancy and Lactation

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

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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**

Nutrition Before Conception

A healthful diet before conception reduces the risk of developing nutrition-related disorders during pregnancy, such as

- **Gestational diabetes**
- **Preeclampsia**

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 ¾ -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 $\frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$	Weight Gain (kg)	Weight Gain (lbs)
Underweight BMI < 18.5	12.7-18.2	28-40
Normal Weight BMI 19-24.9	11.4-15.9	25-35
Overweight BMI 25-29.9	6.8-11.4	15-25
Obese BMI > 30.0	6.8	<15

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

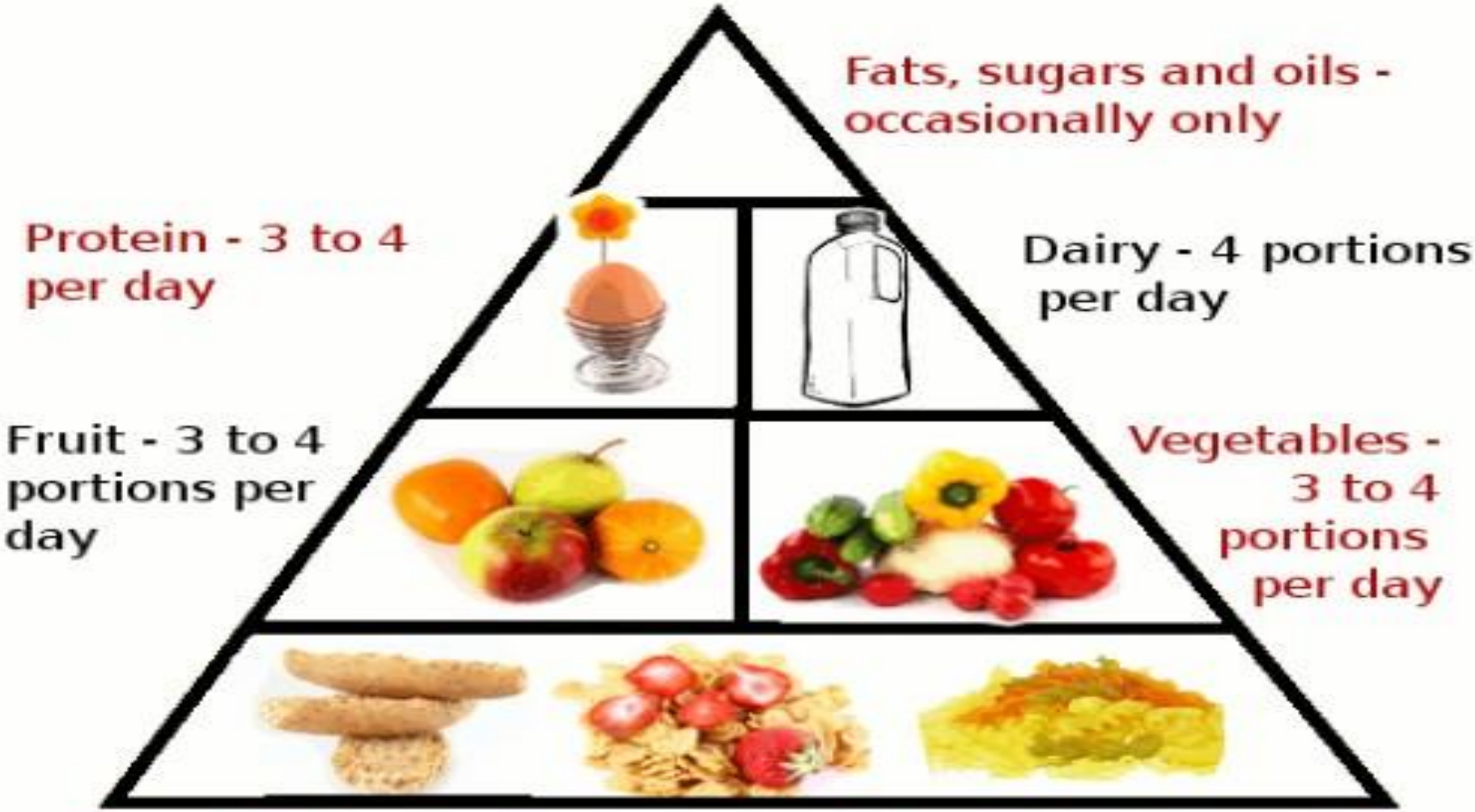
Fat

- **The percentage of calories obtained from fat should not change during pregnancy.**
- **Limit saturated fat, avoid trans fats**
- **Fats are more completely absorbed during pregnancy causing marked ↑in S. lipids & cholesterol.**

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


Fruits
Grains
Dairy
Vegetables
Protein
ChooseMyPlate.gov


Your Daily MyPlate
BREAKFAST
SNACK
LUNCH
SNACK
DINNER

Micronutrients

The micronutrients that are most critical during pregnancy include

- **folate**
- **vitamin B_{12}**
- **vitamin C**
- **vitamin A**
- **vitamin D**
- **calcium**
- **iron**
- **zinc**
- **sodium**
- **iodine**

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.

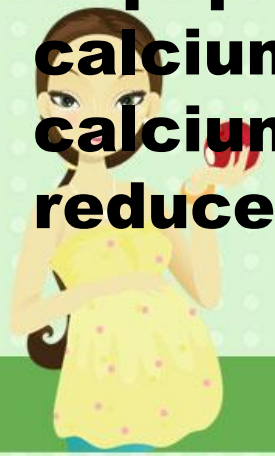
Calcium

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

Dietary sources

- Milk, yogurt (8 Oz), cheese (1 o z) ~ 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.



Zinc

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

Iron: **anemia during pregnancy often caused by low iron stores. Also could be due to poor intake of nutrients aiding utilization and absorption of iron ; 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 new recommendation

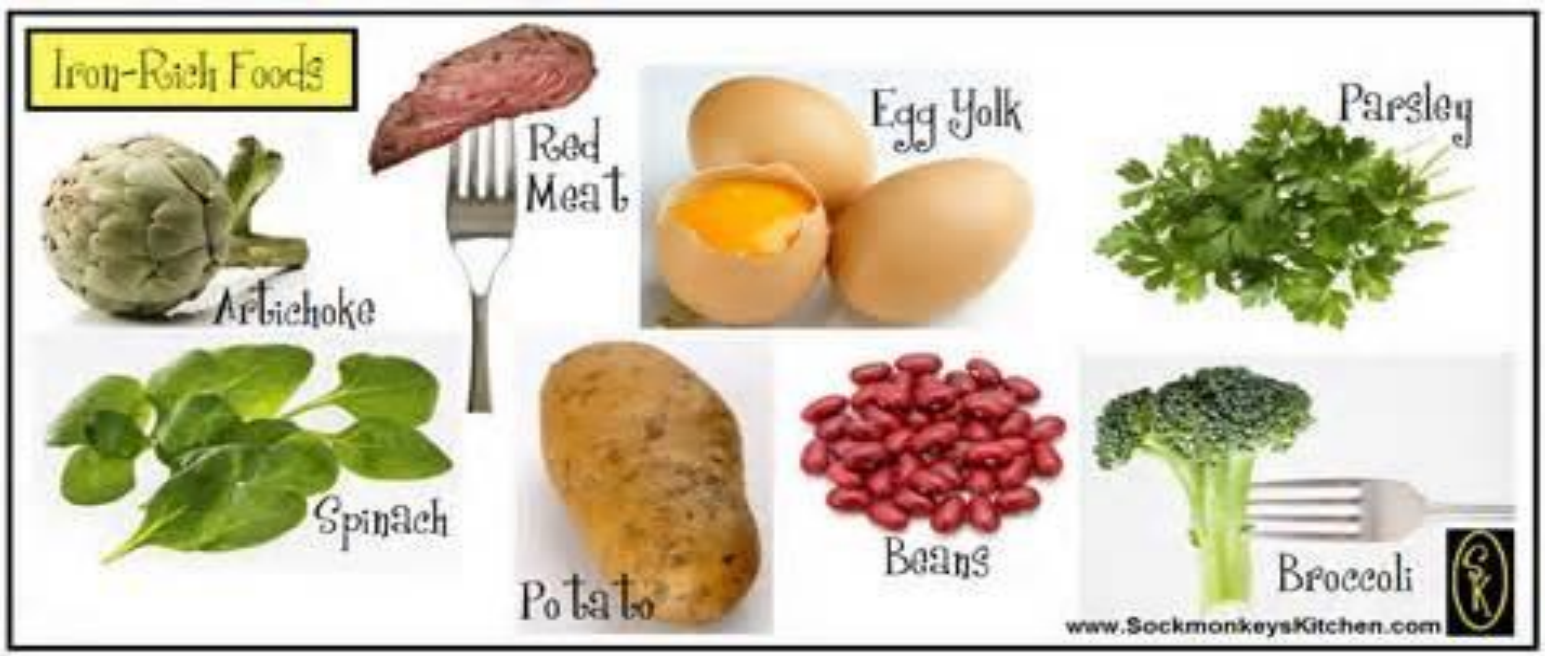
Daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental iron and 400 µg (0.4 mg) of folic acid is recommended for pregnant women to prevent maternal anemia, puerperal sepsis, low birth weight, and preterm birth .

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

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**

- 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 replenishing nutrient stores, returning to a healthful weight, preventing problems in subsequent pregnancies and 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.