


Nutrition During pregnancy and lactation

Dr. Kareem Waheed

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- **Healthy pregnancy**
 - A healthy pregnancy has often been defined by the birth weight of the newborn, because infant mortality, or death, is low for infants with birth weights of 2500 to 3500 gm.



The two key factors that predict infant birth weight are:

- Maternal preconception weight and, weight gain during pregnancy.
- Nutrition and other lifestyle factors affect maternal weight and weight gain, many of these factors, particularly nutrition, are modifiable or may be controlled by the pregnant woman.

Weight gain in pregnancy

The basal metabolic rate (BMR) rises during pregnancy by as much as 15% to 20% by term. This increase is caused by the increased oxygen needs of the fetus and the maternal support tissues.

There are alterations in maternal metabolism of protein, carbohydrate and fat.


Nutritional demands of pregnancy

Mineral needs

Mineral	Daily requirement	importance
Calcium	1000 mg of calcium per day	<ul style="list-style-type: none">☐ construction and maintenance of bone and teeth.☐ important factor in the blood-clotting mechanism.☐ used in normal muscle action
Iodine	increase by 70 mg/day during pregnancy	<ul style="list-style-type: none">☐ Iodine is vital for thyroid hormone synthesis and prevention of goiter.☐ support changes in maternal thyroid economy.☐ increased maternal renal clearance
Iron	27 mg of iron per day	iron supports the red blood cells in the fetus, placenta, and umbilical cord.
Zinc		To provide for the fetus, the mother needs regular intake.


Vitamin needs


Vitamin	Daily requirement	importance
Vitamin A	770 µg	<ul style="list-style-type: none">☒ Vitamin A is an essential factor in cell differentiation, organ formation.☒ maintenance of strong epithelial tissue.☒ tooth formation and normal bone growth
Vitamin C	85 mg/day	<ul style="list-style-type: none">☒ Vitamin C is essential to the formation of intercellular cement substance in developing connective tissues and vascular systems.☒ It also increases absorption of iron, which is needed for the increasing quantities of hemoglobin
Vitamin D	5µg cholecalciferol (200 IU/day)	vitamin D is used to promote the absorption and utilization for these minerals
Vitamin B ₁₂		Vegetarians need to ensure adequate intake of vitamin B ₁₂ from fortified foods or supplements.



The **protein:** for pregnancy is 25 grams per day higher than for non-pregnant women.

Pregnant women can easily meet their protein needs by selecting meats, seafood, poultry, low-fat milk and milk products, and protein-containing plant foods such as legumes, whole grains, nuts, and seeds.

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- **Fat:** The essential fatty acids, however, are particularly important to the growth and development of the fetus. The brain contains a substantial amount of lipid material and depends heavily on long chain omega-3 and omega-6 fatty acids for its growth, function, and structure.




Carbohydrate: (ideally, 175 grams or more per day and certainly no less than 135 grams) is necessary to fuel the fetal brain and spare the protein needed for fetal growth. Fiber in carbohydrate-rich foods such as whole grains, vegetables, and fruit can help alleviate the constipation that many pregnant women experience.

General dietary problems

1. Nausea and vomiting

- Symptoms of nausea and vomiting are usually mild and short term, is called " morning sickness " of early pregnancy.
- This problem occurs because some physiologic factors and hormonal changes in pregnancy or on low blood sugar which can be relieved by carbohydrate foods, but which will return within 2 to 3 hours after a meal.

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- **Hyperemesis:** Severe vomiting during pregnancy, this persistent condition causes severe alterations in fluids and electrolytes, weight loss, and nutritional deficits.

2. Constipation

- Placental hormones relax the gastrointestinal muscles, and the pressure of the enlarging uterus on the lower portion of the intestine may make elimination somewhat difficult.
- Increased fluid intake and the use of naturally laxative foods containing dietary fiber, such whole grains, fruits and vegetables fruits and juices.
- Laxatives should be avoided.
- Appropriate daily exercise is essential for overall health during pregnancy.

3. Heartburn or Gastric pressure: -

- These discomforts occur especially after meals and are usually caused by the pressure of the enlarging uterus crowding the stomach.
- Gastric reflux of some of the food mass, now a liquid chyme mixed with stomach acid, causing an irritation and a burning sensation.
- Small meals, avoiding eating large meals at any time, and not lying down after a meal.

Effects of iron supplements

- The effect of iron supplement may include gray or black stools and sometimes nausea, constipation, or diarrhea.
- The iron supplement should be taken 1 hour before a meal or 2 hours after meal with liquid such as water or orange juice but not with milk or tea.
- The absorption of iron is increased with vitamin C and decreased with milk, other dairy foods, eggs, whole grain bread and cereal, and tea.



Nutrition during lactation Nutritional needs


The physiologic needs of lactation are different from those of pregnancy, and they demand adequate nutritional support.

Lactation (The Milk Production Process)

When an infant suckles, nerves in the mother's nipple signal her brain to release prolactin and oxytocin into her bloodstream.

Prolactin stimulates specialized cells in breasts to form milk. These cells carry out the lactation process by synthesizing some nutrients and removing others from the mother's bloodstream and adding them to her milk. Oxytocin plays a different role in establishing successful lactation. This hormone signals breast tissue to "let down" milk. The letdown reflex enables milk to travel in several tubes (ducts) to the nipple area. Human milk is uniquely formulated to meet the nutrient needs of a newborn baby.

- **Colostrum:** is the first milk that is produced after birth for 3-5 days. It is a yellowish fluid that is rich in antibodies, and it gives the infant his or her first immune boost. Colostrum also contains a substance that encourages the growth of a type of bacteria, *Lactobacillus bifidus*, in the infant's GI tract. Such biologically active substances help an infant's body fight infections and hasten the maturation of the baby's immune system.



Caffeine can cause the infant to be irritable. Alcohol in excess, tobacco, and illegal drugs can be very harmful, the illegal drugs, such as marijuana or heroin can cause the baby to be excessively drowsy and to feed poorly.