

Nutrient Needs during Pregnancy

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Introduction

The nutritional state of a woman before pregnancy can highly affect pregnancy outcome. This signifies the importance of preconception care. All women of childbearing age in which there is any, even slight, chance of pregnancy should be supplemented with:

1. Folic acid, to avoid later neural tube defects.
2. Multivitamin and mineral supplements, to build stores and ensure adequate intake of valuable nutrients.
3. Fish oil, to build stores of essential fatty acids.

Women with the intent of conception should be counseled on their weight, and supported in reaching a healthy BMI before pregnancy because preconception obesity has been associated with

gestational diabetes, preeclampsia and birth defects such as heart abnormalities, Spina bifida, and abdominal malformations. If she needs to lose weight, care must be taken to avoid over-restricting her micronutrients so that she doesn't end up being nutritionally deficient before pregnancy. Also maternal malnutrition primes the child to develop heart disease, diabetes, and high blood pressure later in life. A BMI less than 18.5 is associated with preterm delivery. Eating disorders where the mother is afraid of gaining weight during pregnancy and proceeds to diet and exercise excessively (known as pregorexia) may lead to fetal growth restriction, preterm labor, anemia, and genitourinary infections.

Extra energy needs during pregnancy, according to a comprehensive study released in 2004, Butte et. al are shown in the table below.

Extra energy needs:	Normal weight mother	Underweight mother	Overweight/obese mother
1 st trimester	None	150 calories	None
2 nd trimester	350 calories	200 calories	450 calories
3 rd trimester	500 calories	300 calories	350 calories

The best way to monitor if she is getting an adequate energy intake is by regular weighing. Her weight should increase about 2 to 4 pounds during the first three months, but don't worry if it doesn't increase, that's acceptable. In the 2nd and 3rd trimesters, she should gain about 1 pound a week. If weight gain is too rapid, don't judge her until you check for edema which may be causing this excess weight.

Protein needs of the pregnant woman are 1.1g/kg body weight/day or simply an extra 25grams/day. Groups which need special attention to ensure adequate protein intake include vegetarians and vegans, low income families, and woman with severe nausea and vomiting.

Lipid needs during pregnancy does not differ from that before pregnancy, and should comprise 20-35% of total calories. Omega 3 deficiency has been linked with lower IQ and lower visual acuity in infants, thus they should be supplemented during pregnancy and

lactation. Also choline is essential for development of the brain and spinal cord and can be found in milk, liver, eggs and peanuts.

Fiber requirements are 28 grams/day. Good sources are fruits, vegetables, beans, whole grains, seeds, and nuts.

Carbohydrate requirements are 175 grams/ day. If the mother is diabetic, this is slightly reduced.

Vitamin A: BEWARE. Needs are only slightly higher than pre-pregnant needs, and excess is associated with high risk of birth

defects.

Vitamin D may be found in fatty fish, liver and egg yolks. Don't forget to recommend at least 5-10 minutes of sunlight, at least 3 times a week.

Vitamin B deficiency is rare, however, you must ensure that she gets enough B12 from animal products, dairy, eggs, and fish, and also enough folate from green leafy vegetables, fruits, dried beans and peas. Folate must be supplemented in all pregnant women in the first trimester, even if she has an adequate diet!

Calcium needs are the same as before pregnancy, but ensuring the mother has enough Ca will protect her bones, not those of the developing child which will get his needed Ca at the expense of the mother, even if she is deficient.

RDA for **iron** is 27 mg/day, especially during the 2nd and 3rd trimesters, to create iron stores in the fetus which last up to 6 months after birth. Iron supplements should be taken just before bed and/or with food. Vitamin C will enhance iron absorption, dairy products will inhibit it.

Magnesium is a common deficiency, as supplements are commonly

low in magnesium, providing only about 10-25% of the requirements of the pregnant woman, thus emphasis must be put on dietary sources, such as peanuts, legumes, nuts, bran, and wheat germ. This can reduce leg cramps in the pregnant woman.

Zinc supplements (15 mg) are required for a vegetarian or vegan woman who is pregnant.

Iodine deficiency may cause mental retardation of the baby. Of extra risk are women on low **salt** diets to control edema or hypertension. Note that the salt needs of the pregnant woman are actually higher than the normal population and are not associated with hypertension!

Conclusion

Thus, as is clear from the above discussion, the nutritional balance of the pregnant woman is very sensitive, and any failure to supply her nutritional needs can have dire consequences, both on herself, as well as on the expected baby. Thus, all pregnant women must undergo regular checkups, to ensure that they are receiving adequate nutrient intakes.