

# Role of Nutritious Diet in Pregnancy

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**Abstract:** Good nutrition is important for all New Zealanders, but it assumes an even greater Importance for women when they are pregnant or breastfeeding their infant. Pregnancy is a time when nutritional needs are higher, and meeting those needs has a positive effect on the health of both the mother and her unborn baby. The effects of nutrition while the foetus is developing during pregnancy last for a lifetime, and we want to see children inherit a legacy of good health for the future. We also want to see women enjoying a healthy pregnancy without the negative effects of poor nutrition on their health, and in the best possible nutritional state to support breastfeeding. Breastfeeding is the best and safest way to feed infants, and women and families need to be given all the advice and support possible to assist them in establishing and continuing breastfeeding for at least the first six months of the infant's life. This paper brings together all the key areas of food and nutrition affecting the health of pregnant and breastfeeding women. It is intended that health practitioners, educators and caregivers will use this paper and the accompanying health education booklets, *Eating for Healthy Pregnant Women* and *Eating for Healthy Breastfeeding Women*, to provide sound advice and support to pregnant and breastfeeding women and their families to achieve a healthy lifestyle.

**Keywords:** Nutritious Diet in Pregnancy.

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## 1. THE IMPORTANCE OF NUTRITION IN PREGNANCY FOR LIFELONG HEALTH

Babies depend on their mothers to provide a healthy environment for them to grow and develop during pregnancy. Nutrition has always been considered an important factor in the health of the developing infant, but did you know that it could influence more than birth weight? It is well accepted that the quality of the maternal environment that the infant develops in is central to health and disease later in life.

So what can childbearing women do to create the best environment for the health of their babies, now and in the future? Even before pregnancy, women can prepare themselves to have a healthy pregnancy. Healthy body weight is important in reducing health risks for both mothers and babies. Normal weight is considered to be between 18.5-24.9 kg/m<sup>2</sup>. Before becoming pregnant, overweight women should select a food and exercise plan that results in the burning of more energy than the amount taken in by diet, leading to weight loss. Underweight women should select healthy foods with more energy taken in, compared to energy lost in physical activity, in order to gain weight. The Institute of Medicine recommendations for weight gain in pregnancy are based on prepregnancy weight, so it is important for women to talk to their doctors or nurse practitioners early in pregnancy about the right amount of weight to gain for a healthy and safe pregnancy.

Good nutrition in pregnancy involves more than calories alone. Pregnancy increases the demand for protein, amino acids, omega-3 fatty acids, folic acid, iron, copper and other minerals. While food sources are the best way to get the additional nutrients, vitamin and mineral supplements are often required to help mothers reach the recommended levels. Prenatal vitamins contain recommended nutrient levels needed during pregnancy. Ideally, women should begin taking a multivitamin or prenatal vitamin at least one month prior to pregnancy. This is particularly important to ensure intake of folic acid which reduces the risk of spina bifida and other similar complications. Recent studies also stress the importance of vitamin D during pregnancy, a particular concern for women in the northern plains. Vitamin D is not found naturally in most foods, so must be taken in foods that are fortified. Because of the health benefits of vitamin D and the high rate of

vitamin D deficiency in many people, vitamin D is found in an increasing number of food products. Good sources of vitamin D fortified foods include milk, certain types of yogurt and juice, fortified cereals and breakfast bars.

The maternal nutritional environment can have lasting consequences for maternal health and can influence the future health of babies. Maternal under nutrition may result in babies who are born small. Low birth weight can lead to complications in the early newborn period and are also associated with increased risk for chronic conditions later in life, including coronary heart disease, hypertension and type 2 diabetes. Obesity is a risk factor for serious complications of pregnancy, gestational diabetes and hypertension in pregnancy. Women who develop these conditions during pregnancy are at risk for the development of type 2 diabetes and heart disease later in life. In addition, babies born to mothers with obesity, gestational diabetes and preeclampsia have a higher risk of developing similar conditions themselves as they age into adulthood.

Because maternal nutrition is a critical factor for risk of developing health complications during pregnancy and in the future, steps should be taken to optimize body weight through healthy nutrition and physical activity prior to pregnancy and continued during pregnancy and lactation. The benefits will last a lifetime (or two)!

## 2. KEY PREGNANCY NUTRITION

A pregnant woman needs more calcium, folic acid, iron and protein than a woman who is not expecting, according to the American College of Obstetricians and Gynecologists (ACOG). Here is why these four nutrients are important.

**Folic acid**, also known as folate when found in foods, is a B vitamin that is crucial in helping to prevent birth defects in the baby's brain and spine, known as neural tube defects.

It may be hard to get the recommended amount of folic acid from diet alone. For that reason the March of Dimes, an organization dedicated to preventing birth defects, recommends that women who are trying to have a baby take a daily vitamin supplement containing 400 micrograms of folic acid per day for at least one month before becoming pregnant. During pregnancy, they advise women to increase the amount of folic acid to 600 micrograms a day, an amount commonly found in a daily prenatal vitamin.

Food sources: leafy green vegetables fortified or enriched cereals, breads and pastas.

**Calcium** is a mineral used to build a baby's bones and teeth. If a pregnant woman does not consume enough calcium, the mineral will be drawn from the mother's stores in her bones and given to the baby to meet the extra demands of pregnancy, explains the Academy of Nutrition and Dietetics. Many dairy products are also fortified with vitamin D, another nutrient that works with calcium to develop a baby's bones and teeth.

Pregnant women age 19 and over need 1,000 milligrams of calcium a day; pregnant teens, ages 14 to 18, need 1,300 milligrams daily, according to ACOG.

Food sources: milk, yogurt, cheese, calcium-fortified juices and foods, sardines or salmon with bones, some leafy greens (kale, bok choy).

**Iron:** Pregnant women need 27 milligrams of iron a day, which is double the amount needed by women who are not expecting, according to ACOG. Additional amounts of the mineral are needed to make more blood to supply the baby with oxygen. Getting too little iron during pregnancy can lead to anemia, a condition resulting in fatigue and an increased risk of infections.

For better absorption of the mineral, include a good source of vitamin C at the same meal when eating iron-rich foods, ACOG recommends. For example, have a glass of orange juice at breakfast with an iron-fortified cereal.

Food sources: meat, poultry, fish, dried beans and peas, iron-fortified cereal.

**Protein:** More protein is needed during pregnancy, but most women don't have problems getting enough of these foods in their diets, said Sarah Krieger, a registered dietitian and spokeswoman on prenatal nutrition for the Academy of Nutrition and Dietetics in St. Petersburg, Florida. She described protein as "a builder nutrient," because it helps to build important organs in the baby, such as the brain and heart.

Food sources: meat, poultry, fish, dried beans and peas, eggs, nuts, tofu.

### 3. FOODS TO EAT

During pregnancy, the goal is to be eating nutritious foods most of the time, Krieger told Live Science. To maximize prenatal nutrition, she advises emphasizing the following five food groups: fruits, vegetables, lean protein, whole grains and dairy products.

When counseling pregnant women, Krieger recommends they fill half their plates with fruits and vegetables, a quarter of it with whole grains and a quarter of it with a source of lean protein, and to also have a dairy product at every meal.

**Fruits and vegetables:** Pregnant women should focus on fruits and vegetables, particularly during the second and third trimesters, Krieger said. Get between five and 10 "tennis ball"-size servings of produce every day, she said. These colorful foods are low in calories and filled with fiber, vitamins and minerals.

**Lean protein:** Pregnant women should include good protein sources at every meal to support the baby's growth, such as meat, poultry, fish, eggs, beans, tofu, cheese, milk and nuts, Krieger said.

**Whole grains** are an important source of energy in the diet, and they also provide fiber, iron and B-vitamins. At least half of a pregnant woman's carbohydrate choices each day should come from whole grains, such as oatmeal, whole-wheat pasta or breads and brown rice, Krieger said.

**Dairy:** Aim for 3 to 4 servings of dairy foods a day, Krieger suggested, such as milk, yogurt and cheese, which provide good dietary sources of calcium, protein and vitamin D.

In addition to a healthy diet, pregnant women also need a daily prenatal vitamin to obtain some of the nutrients that are hard to get from foods alone, such as folic acid and iron, according to ACOG.

For women who take chewable prenatal vitamins, Krieger advised checking the product labels because chewables might not have sufficient iron levels in them.

Detailed information on healthy food choices and quantities to include at meals can also be found in the pregnancy section of the USDA's [choosemyplate.gov](http://choosemyplate.gov).

### 4. FOODS TO LIMIT

**Caffeine:** Consuming fewer than 200 mg of caffeine a day, which is the amount found in one 12-ounce cup of coffee, is generally considered safe during pregnancy, according to a 2010 ACOG committee opinion, which was reaffirmed in 2013. The committee report said moderate caffeine consumption does not appear to contribute to miscarriage or premature birth.

**Fish:** Fish is a good source of lean protein, and some fish, including salmon and sardines, also contain omega-3 fatty acids, a healthy fat that's good for the heart. It is safe for pregnant women to eat 12 ounces of cooked fish and seafood a week, according to ACOG. However, they should limit albacore or "white" tuna, which has high levels of mercury, to no more than 6 ounces a week, according to ACOG. Mercury is a metal that can be harmful to a baby's developing brain. Canned light tuna has less mercury and is safer to eat during pregnancy.

Eating a healthy diet during pregnancy is one of the best things you can do for yourself and your baby. After all, the food you eat is your baby's main source of nutrition. Smart choices about pregnancy nutrition can help you promote your baby's growth and development.

Check out these guidelines, designed for a 25-year-old woman who has a normal weight and gets 30 to 60 minutes of moderate physical activity a day. If you're older, overweight, or follow a more or less intense workout program, your nutritional needs might differ. To find the plan that's right for you, visit the U.S. Department of Agriculture's (USDA's) Daily Food Plan for Moms.

### 5. GRAINS

Grains provide essential carbohydrates, your body's main source of energy. Many whole-grain and enriched products also contain fiber, iron, B vitamins and various minerals. Fortified bread and cereal can help you get enough folic acid.

**What to eat:** Make sure at least half of your grains each day are whole grains. If that sounds like a lot, don't worry. It might not be as much as you think. You can get most of your day's grains with a bowl of fortified cereal for breakfast, a lunchtime sandwich made with two slices of whole-wheat bread and whole-wheat pasta for dinner.

To optimize pregnancy nutrition, trade sugary cereals and white bread for whole-grain cereals, brown rice, whole-wheat pasta and whole-grain bread. Try wild rice or barley in soups, stews, casseroles and salads. Look for products that list whole grains, such as whole-wheat flour, first in the ingredients list.

**How much:**

*Suggested daily servings of grains for a woman age 25, 5'4"*

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
Source: USDA Daily Food Plan for Moms, 2013			
110 lbs. (49.9 kg)	6 oz.	8 oz.	8 oz.
140 lbs. (63.5 kg)	7 oz.	9 oz.	9 oz.

*Suggested daily servings of grains for a woman age 25, 5'9"*

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
Source: USDA Daily Food Plan for Moms, 2013			
128 lbs. (58.1 kg)	7 oz.	9 oz.	9 oz.
162 lbs. (73.5 kg)	8 oz.	10 oz.	10 oz.

## 6. FRUITS AND VEGETABLES

Fruits and vegetables are critical components of pregnancy nutrition, since they provide various vitamins and minerals, as well as fiber to aid digestion. Vitamin C, found in many fruits and vegetables, helps you absorb iron. Dark green vegetables have vitamin A, iron and folate — other important nutrients during pregnancy.

**What to eat or drink:** Top your cereal with slices of fresh fruit. Make a veggie pizza. Add extra vegetables to your casserole.

If you're tired of apples, oranges and green beans, branch out. Try apricots, mangoes, pineapple, sweet potatoes, winter squash or spinach. Make trail mix with a variety of dried fruit. Fruit juice counts, too, but remember that too much juice can lead to undesired weight gain.

**How much:**

*Suggested daily servings of fruits and vegetables for a woman age 25, 5'4"*

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
Source: USDA Daily Food Plan for Moms, 2013			
110 lbs. (49.9 kg)	4 1/2 cups	5 cups	5 cups

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
140 lbs. (63.5 kg)	5 cups	5 1/2 cups	5 1/2 cups

*Suggested daily servings of fruits and vegetables for a woman age 25, 5'9"*

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
Source: USDA Daily Food Plan for Moms, 2013			
128 lbs. (58.1 kg)	5 cups	5 1/2 cups	5 1/2 cups
162 lbs. (73.5 kg)	5 cups	6 cups	6 cups

## 7. MEAT, POULTRY, FISH, EGGS AND BEANS

Foods in this group have plenty of protein, as well as B vitamins and iron. Protein is crucial for your baby's growth, especially during the second and third trimesters.

**What to eat:** Try whole-wheat toast with peanut butter for breakfast. Eat a scrambled egg or an omelet for lunch. Serve a salmon fillet for dinner. Add chickpeas or black beans to your salad. Snack on a handful of soy nuts.

If your traditional sources of protein no longer appeal to you — likely during the first trimester — experiment with other options. Fish is an excellent source of protein as well as omega-3 fatty acids, which can promote your baby's brain development. Avoid fish that's potentially high in mercury, however, including swordfish, king mackerel, tilefish and shark.

**How much:**

*Suggested daily servings of meat, poultry, fish, eggs and beans for a woman age 25, 5'4"*

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
Source: USDA Daily Food Plan for Moms, 2013			
110 lbs. (49.9 kg)	5 1/2 oz.	6 1/2 oz.	6 1/2 oz.
140 lbs. (63.5 kg)	6 oz.	6 1/2 oz.	6 1/2 oz.

*Suggested daily servings of meat, poultry, fish, eggs and beans for a woman age 25, 5'9"*

Weight before pregnancy	1st trimester	2nd trimester	3rd trimester
Source: USDA Daily Food Plan for Moms, 2013			
128 lbs. (58.1 kg)	6 oz.	6 1/2 oz.	6 1/2 oz.
162 lbs. (73.5 kg)	6 1/2 oz.	7 oz.	7 oz.

## 8. DAIRY PRODUCTS

The calcium in dairy products and calcium-fortified soy milk helps build your baby's bones and teeth. Dairy products also have vitamin D and protein.

**What to eat or drink:** Eat yogurt for your afternoon snack. Drink the milk in your cereal bowl. Have a glass of skim milk with dinner. Add low-fat cheese to a salad.

If you have trouble digesting dairy products, get creative. Try calcium-fortified orange juice or sardines. Experiment with lactose-reduced or lactose-free products. Use an over-the-counter lactase enzyme product when you eat or drink dairy products.

**How much:** Choose 3 cups a day, regardless of your height, weight, physical activity level or stage of pregnancy.

## 9. PRACTICAL ADVICE FOR PREGNANT AND BREASTFEEDING WOMEN

- Pregnant and breastfeeding women should enjoy regular, moderate physical activity. The aim is to be physically active at moderate intensity for a total of 30 minutes on most if not all days of the week.
- Regular, moderate physical activity and an appropriate energy intake should be maintained to help achieve the recommended weight gain.
- If active before becoming pregnant, the level of physical activity enjoyed before becoming pregnant can be maintained, but not increased beyond that level.
- A good support bra is recommended (not an underwire bra, as this may put undue pressure on the breasts and could lead to blocked milk ducts), along with loose clothing and supportive footwear.
- Exercising pregnant and breastfeeding women should take frequent breaks, consume adequate food and drinks, and avoid exercising in extremely hot weather.
- Physical activity should not cause severe discomfort, breathlessness or exhaustion. A common guide is that when being physically active, pregnant women should have enough breath to hold a conversation. If pregnant women experience vaginal bleeding or fluid discharge, pain, dizziness, fainting, persistent contractions or a reduction in the baby's movements, they should stop the activity and seek advice from their LMC urgently.
- Breastfeeding mothers may need to consider the timing of breastfeeding and physical activity if breast refusal is a factor.

Recommendations for pregnant and breastfeeding women. Women who are pregnant or planning to become pregnant should avoid drinking alcohol.

The message from health practitioners to abstain from alcohol during the entire pregnancy is unequivocal and should be promoted by all health practitioners. The consequences of alcohol exposure for the child and family should be clearly explained to pregnant women and to women contemplating, or exposed to the possibility of, pregnancy. Where a pregnant woman is unable to abstain from drinking alcohol, all possible assistance should be offered by the LMC, including referral to appropriate agencies. Some women may have drunk some alcohol before realising that they were pregnant. LMCs need to reassure THESE WOMEN WHILE MAINTAINING A STRONG ADVOCACY FOR ABSTINENCE (KOREN ET AL 2003).

## 10. PRACTICAL ADVICE

Women should not smoke if they are pregnant or breastfeeding.

- If a breastfeeding woman continues to smoke, exposure of the infant to second-hand smoke should be minimised by not smoking while breastfeeding, and by smoking outside.
- Women who are ceasing or reducing smoking may require expert support and advice from a registered dietitian about weight gain and energy intake in pregnancy.

- Services available to aid smoking cessation include the free QUITLINE number 0800 778 778, Aukati Kai Paipa Smoking Cessation Services, nicotine replacement therapy (NRT) Exchange Card providers, Smoke Change programme, and self-help manuals and advice from the LMC on intervention strategies (National Advisory Committee on Health and Disability 2002).
- Nicotine replacement therapy (NRT) should be considered if the pregnant or breastfeeding woman is unable to quit (National Advisory Committee on Health and Disability 2002).
- If a woman chooses to smoke during pregnancy, it is especially important for them to eat a variety of nutritious foods, including the recommended number of servings from the four major food groups (see Table 1), and to follow the Food and Nutrition Guidelines.

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