



Pregnancy: Preparation for the Next Generation

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Keywords

Pregnancy · Nutrient requirements · Weight gain · High-risk pregnancies · Food safety · Breastfeeding

Key Points

- Good nutrition practices should begin in the preconception period.
- A healthy weight should be achieved before conception, if possible, and appropriate weight gain during pregnancy should be based on prepregnancy body mass index (BMI).
- Most nutrient requirements during pregnancy can be met through consumption of a wide variety of nutritious foods. However, all women of childbearing age should take a folic acid supplement before and during pregnancy, and some high-risk women can benefit from iron and/or calcium supplements during pregnancy as well.
- Nutrition remains an important concern during the postpartum period, especially for women who choose to breastfeed their infants and to promote postpartum weight loss.
- Referrals for specialized advice or additional support should be made for women with high-risk pregnancies, inappropriate gestational weight gain, hyperemesis gravidarum (excessive nausea and vomiting), multiple gestations, chronically poor diet/dietary restriction/disordered eating, chronic diseases such as hypertension and diabetes, and women with concerns about breastfeeding.

Introduction

Nutrition is a modifiable factor that has a notable impact on healthy pregnancy outcomes. Some effects of good nutrition during pregnancy can be appreciated immediately, such as reduced risk of maternal anemia and improved maternal glucose control. Others are evident upon the birth of the infant, such as healthy birth weight and absence of congenital defects. Still other benefits of a healthy diet during pregnancy may not be apparent for years to come.

Evidence continues to emerge supporting the fetal origins hypothesis which theorizes that in utero conditions have profound and long-lasting effects on fetal DNA and the subsequent health of offspring [1]. Furthermore, dietary habits during pregnancy have been associated with health status

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indicators in children such as evidence from the Project Viva [2] and Generation R [3] studies showing that a higher intake of sugar-sweetened beverages during pregnancy is associated with greater adiposity in children after adjustment for confounding factors.

Good nutrition practices should be part of a continuum of care beginning with preconception counseling and continuing throughout pregnancy, lactation, and the postpartum period.

Nutrition in the Preconception Period

Recent data indicate that 45% of live births were the result of unintended pregnancies [4]. In this light, it is clear that issues pertaining to childbirth readiness should be discussed with all women of childbearing age at primary care visits.

Achieving and/or maintaining a healthy body weight is a goal that should be considered well in advance of pregnancy. The Institute of Medicine recommends that women with obesity lose weight before pregnancy to improve menstrual functioning, ovulation, and metabolic profile and reduce infertility. In addition, overweight women should receive preconception counseling to improve diet quality, increase physical activity, and normalize weight. Women who enter pregnancy with a BMI in the overweight or obese range have an increased risk of fetal death, stillbirth, and neonatal, perinatal, and infant death, as well as gestational diabetes, preeclampsia, and other complications of pregnancy. However, weight loss during pregnancy is not recommended [5].

Eating habits can be difficult to change, but women often have increased motivation to make positive lifestyle changes before conception. Some key advice to promote optimal preconception nutrition includes:

- Following the recommendations of the USDA Dietary Guidelines for Americans (www.choosemyplate.gov; provides advice on planning meals during pregnancy [6]).
- Consuming a wide variety of foods from the five food groups.
- Following a regular eating pattern such as eating three meals and two to three snacks per day.
- Choosing minimally processed foods rather than foods with added salt, sugar, and fat.
- Achieving a healthy weight.
- Taking 400 µg of folic acid every day.
- Limiting caffeine to less than 200 mg/day.
- Avoiding alcohol.

In addition, the physician should screen for conditions, habits, and practices that might interfere with good nutrition, such as lactose intolerance, iron deficiency anemia, diets that restrict or eliminate food groups (such as vegan diets), pica, use of megadose vitamin and mineral supplements, use of herbal supplements, history of bariatric surgery, and extreme weight loss/fad diets/disordered eating. It may be warranted to refer women who fall into these categories to a registered dietitian nutritionist (RDN) for specialized support.

Women with preexisting disease conditions with a nutrition component should be referred to a RDN for medical nutrition therapy. These include diabetes, hypertension, HIV/AIDS, and phenylketonuria. Gestational diabetes is a condition that sometimes develops as a result of pregnancy and is discussed later in this chapter.

Folic acid has been proven to reduce the risk of neural tube defects when taken in the periconception period. Since the neural tube is formed and closes within the first month of pregnancy, and many women are not aware that they are pregnant until after this critical period, folic acid supplementation is most effective at preventing defects when taken before conception. The current recommendation is that all women of childbearing age take a supplement every day containing 400 µg folic acid [7] in addition to consuming foods that are good sources of folic acid, including leafy green vegetables, citrus fruits, and fortified cereals. Women in the lowest socioeconomic brackets deserve special

consideration as they tend to have the highest risk for neural tube defects [8] and may be least likely to use supplements [9]. Women who have previously had a pregnancy affected by a neural tube defect should take a 4000 µg folic acid supplement daily for at least 1 month before conception and for the first 3 months of pregnancy [7].

Nutrition During Pregnancy

The goal of nutrition during pregnancy is twofold, namely, to reduce adverse outcomes in the mother and in the fetus. Maternal outcomes that can be affected by nutritional status include risk for maternal anemia, gestational diabetes, preeclampsia, postpartum infections, and complications of labor and delivery. For the infant, low birth weight (<2500 g), small for gestational age, prematurity, fetal death, infant death, macrosomia, and some congenital defects are all poor birth outcomes that can be affected by nutrition status.

Weight Gain in Pregnancy

Weight gain guidelines for pregnant women are dictated primarily by the woman's prepregnancy BMI (see Table 2.1) [5]. These recommended weight gain ranges apply to all women irrespective of height and racial or ethnic group.

In addition to total weight gain, the pattern of weight gain is also important, and the IOM has indicated appropriate rates of weight gain during the second and third trimesters as summarized in Table 2.1. Any sudden and drastic gain in weight should be investigated carefully as this may indicate fluid retention and possible hypertension.

Energy and Macronutrient Needs During Pregnancy

Calorie needs during pregnancy are not increased in the first trimester, but are increased by 340 and 450 kcal/day in the second and third trimesters, respectively. Individuals who engage in little physical activity may need less, and the converse is true for individuals who are very active. The best way to assess whether caloric intake is sufficient is by monitoring weight gain.

Protein needs are increased modestly from 0.8 g of protein/kg/day for the nonpregnant state to 1.1 g of protein/kg/day during pregnancy. Protein-rich foods include lean meat, poultry, fish (some fish should be limited or avoided during pregnancy as described below), eggs, beans, nuts, and peanut butter. Protein supplements, such as high-protein drinks, are not recommended.

Approximately 175 g/day of carbohydrate is required during pregnancy. Again, this amount is adequately provided by a healthy diet, and most women have no difficulty achieving this. Carbohydrate is necessary to provide energy to the fetal brain and to spare protein for tissue growth. Some women who have adopted very-low-carbohydrate diets should be counseled on the importance of including

Table 2.1 Recommended total weight gain and rate of weight gain in pregnancy based upon prepregnancy BMI

Prepregnancy body mass index (BMI)	Suggested total weight gain (lb [kg])	Rates of weight gain in the second and third trimesters (lb/week [kg/week]) ^a
<18.5 (underweight)	28–40 [12.7–18.2]	1 [0.45]
18.5–24.9 (healthy weight)	25–35 [11.4–15.9]	1 [0.45]
25.0–29.9 (overweight)	15–25 [6.8–11.4]	0.6 [0.27]
≥30 (obese)	11–20 [5.0–9.1]	0.5 [0.23]

^aAssumes a weight gain of 1.1–4.4 lb. (0.5–2 kg) in the first trimester

Source of information: Ref. [5]

complex carbohydrates in their meals and snacks as the safety of low-carbohydrate diets during pregnancy has not been established.

Essential fatty acids (n-3 and n-6 fatty acids) are required for the proper development of the fetal central nervous system. Good sources of these fats include vegetable oils, seeds, nuts, and fish. Several research studies have shown a clear positive association between fish intake during pregnancy and indicators of neural development of the child, including cognition and visual acuity [10, 11]; however, evidence from randomized controlled trials (RCTs) is inconclusive [12].

Although fish are the richest source of n-3 fatty acids, intake of some fish should be limited, and some fish should be avoided, during pregnancy due to concerns about mercury, as discussed below under “Food Safety During Pregnancy.”

Fluid needs during pregnancy are generally accommodated for in response to increased levels of thirst. Water, milk, and other unsweetened beverages are the best choices for hydration.

Vitamin and Mineral Needs During Pregnancy

The requirements for many vitamins and minerals are increased during pregnancy. A carefully chosen diet of nutrient-dense foods is sufficient to cover most vitamin and mineral needs. However, there are some nutrients that remain a concern during pregnancy. See Table 2.2 for recommended intakes for selected nutrients [13, 14]. Additional information on vitamins and minerals is provided in the tables in Chaps. 34 and 35.

The importance of taking a folic acid preconception in order to prevent neural tube defects such as spina bifida has been discussed earlier in this chapter. The RDA for folate in pregnancy is 600 µg/day. It may be hard for women to get the recommended amount from food alone, and so all women should continue to take a daily 400 µg folic acid supplement during pregnancy alongside consuming a diet rich in folate.

Vitamin D plays an essential role in fetal growth and deposition of calcium in the skeleton and teeth. Primary sources of vitamin D include exposure to the sun and milk fortified with vitamin D. Women who have dark skin, use sunscreen, avoid sun exposure, live in northern latitudes, or avoid milk may have low blood levels of the vitamin. In such cases, increased intakes of fortified dairy products and supplementation at levels consistent with the RDA (Table 2.2) are the preferred strategy. However, in cases of actual deficiency, supplementation at higher doses may be necessary to prevent osteomalacia in the mother or rickets in her offspring.

Table 2.2 Recommended dietary allowance (RDA) and adequate intake (AI) for selected nutrients in pregnancy

Life stage	RDA folate (µg/day)	RDA vitamin D (µg/day)	RDA vitamin A (µg/day)	RDA vitamin B ₁₂ (µg/day)	RDA iron (mg/day)	RDA calcium (mg/day)
Pregnancy, 14–18 years	600	15	750	2.6	27	1300
Pregnancy, 19–30 years	600	15	770	2.6	27	1000
Pregnancy, 31–50 years	600	15	770	2.6	27	1000
Lactation, 14–18 years	500	15	1200	2.8	10	1300
Lactation, 19–30 years	500	15	1300	2.8	9	1000
Lactation, 31–50 years	500	15	1300	2.8	9	1000

Source of information: Refs. [13, 14]

Excess intake of vitamin A is a concern during pregnancy as it is a known teratogen and may cause birth defects. In addition to avoiding supplements with more than 1500 µg (5000 IU) of retinol or retinoic acid, women should be warned against the use of oral acne medications, such as Accutane, which is derived from vitamin A. Beta-carotene, the precursor form of vitamin A found in plant foods, is nontoxic.

Although the requirement for vitamin B₁₂ is increased during pregnancy, needs are easily met by a mixed diet that includes foods of animal origin. Vegan diets may be deficient in vitamin B₁₂, and, therefore, women who consume no animal products must use a supplement or choose foods that are fortified with the vitamin.

Calcium metabolism changes dramatically during pregnancy. Absorption, bone turnover, and excretion all increase, and the fetus and placenta accumulate calcium. By these mechanisms, calcium balance is adequately maintained without increasing dietary intake over prepregnancy requirements. Women with chronically low intakes of calcium should be encouraged to increase their intake of dairy foods and/or other foods that are good sources of calcium, including fortified foods (such as cereals, juices, and soy milk), dark green leafy vegetables, and legumes. The calcium in dairy foods is the most bioavailable, and calcium requirements can be met through 3–4 servings of dairy foods a day. Women with calcium intake below 500 mg/day may need supplements to ensure maternal and fetal bone requirements are met [17].

Iron requirements are increased during pregnancy to support increases in maternal and fetal hemoglobin production. Although the maternal body compensates with increased absorption, fetal needs appear to take precedence over maternal needs, often leading to iron deficiency and/or iron deficiency anemia. Iron deficiency anemia during pregnancy is linked to increased risk for preterm birth, low birth weight, fatigue, and reduced resistance to infection in the mother and lower intelligence quotients and abnormal behavior scores in children born to anemic mothers.

Because plasma volume increases at a more rapid pace than red blood cell production, hemodilution is common in pregnancy. Therefore, the cutoff values used for screening for anemia are different for pregnancy. Hemoglobin values less than 11 g/dL (110 g/L) in the first trimester and less than 10.5 g/dL (105 g/L) in the second and third trimesters indicate anemia.

Iron requirements are increased by a greater percentage during pregnancy than are calorie needs. These increased needs are hard to meet through diet alone. For this reason, many healthcare practitioners routinely prescribe supplements with 30 mg of iron for all pregnant women beginning at the second trimester. Others, however, prefer to screen for anemia before recommending a supplement. Women diagnosed with anemia may be prescribed larger dose supplements, with 60–180 mg iron. However, high doses of iron are associated with adverse gastrointestinal effects, including nausea, cramps, and constipation. A balance between increased dietary intake from food and a tolerable level of supplemental iron must be sought.

It was formally believed that low-sodium diets help prevent water retention, edema, and hypertension. It is now known that adequate sodium plays an important role in fluid balance during pregnancy, and women should not be advised to restrict their sodium intake.

Substances to Limit or Avoid in Pregnancy

Women who are pregnant or who could become pregnant should abstain from drinking alcohol to prevent the array of birth defects associated with fetal alcohol spectrum. Women should be counseled to quit smoking before becoming pregnant, but quitting at any time during pregnancy will confer benefits. Moreover, as second-hand smoke can harm the infant after birth, infants should not be exposed to cigarette smoke. Caffeine consumption should be limited to less than 200 mg/day or about

two 6 oz. cups of coffee or four cups of tea. Energy drinks contain varying amounts of sugar, caffeine, and legal stimulants or herbal ingredients. Their safety during pregnancy has not been studied, and it is advisable for pregnant women to avoid consumption [15]. Artificial sweeteners such as aspartame, sucralose, and saccharine are safe to use in moderation. The safety of many herbal supplements and remedies has not been tested, and practitioners should question their patients about their use of these products.

Food Safety During Pregnancy

There are some basic steps that can greatly reduce the risk of foodborne illness during pregnancy: washing hands often before and during food preparation and before eating; keeping raw foods separate from cooked and ready-to-eat foods; cooking foods to proper temperatures; and promptly refrigerating leftover foods and cold foods brought home from the grocery store. Women should be cautioned against eating raw or undercooked meat and eggs, including raw cookie dough, Caesar dressing, soft cooked eggs, and rare hamburgers.

The bacteria *Listeria monocytogenes* can cause miscarriage, premature labor, and infant death. It is unique because it can grow at refrigerated temperatures. For this reason, pregnant women should avoid eating unpasteurized dairy products, including unpasteurized cheese, deli meats, deli salads, smoked seafood, and pâtés. Processed and cured meats like hot dogs must be heated until steaming.

The bacteria *Toxoplasma gondii* is commonly known to infect cat litter but can also be present in raw and undercooked meats and on the surface of fruits and vegetables. Avoiding touching cat litter, thoroughly cooking meats, and rinsing fruits and vegetables before eating can reduce the risk of exposure.

The mercury content of fish is also a concern for pregnant women [16, 17]. Advice for women who are pregnant and breastfeeding is to eat 2–3 servings a week (8–12 oz) of a variety of fish. Best choices that are lowest in mercury include salmon, shrimp, pollock, tuna (light canned), tilapia, catfish, and cod. Some fish should be limited to no more than one serving a week (max 6 ounces) (termed “good” choices) such as halibut, snapper, and monkfish. Pregnant women should avoid eating shark, swordfish, king mackerel, marlin, orange roughy, tuna (bigeye), and tilefish from the Gulf of Mexico. Full details of the “best” and “good” choices and fish to avoid can be found in the American College of Obstetricians and Gynecologists practice advisory on seafood consumption during pregnancy [17].

Translating Nutrition Guidelines into Practical Advice About Food

Women do not eat grams of macronutrients or milligrams of minerals; they eat foods from different food groups on their own or as part of a meal. Practical advice for women, therefore, needs to be food-based rather than nutrient-based. Most nutrient needs will be met by a carefully selected, varied, nutrient-dense diet. Food guidelines for pregnant and lactating women can be found at www.choosemyplate.gov [6]; MyPlate allows women to plan the amounts of each food from the five food groups that are needed during each trimester of pregnancy, tailored to their height, prepregnancy weight, activity levels, and due date.

Special Concerns During Pregnancy

Common Complaints

The hormonal changes that occur during pregnancy can cause a host of uncomfortable symptoms for women, including morning sickness, heartburn, constipation, and food cravings. Women should be discouraged from taking herbal or “folk” remedies for these ailments as the safety of many of these treatments has not been tested.

Despite its name, morning sickness can strike at any time of the day. Many women suffer from nausea and vomiting only in the early part of pregnancy, but, for others, the symptoms can last for the entire three trimesters. The following suggestions may alleviate the discomfort of morning sickness: having something dry to eat like toast or crackers before getting out of bed in the morning, consuming small frequent meals rather than three large meals, and consuming liquids separately from meals and snacks. Food odors that cause queasiness are often less offensive if foods are eaten cold. Fresh air may also help. Ginger, chamomile, vitamin B6, and/or acupuncture are recommended by the World Health Organization for the relief of nausea in early pregnancy [18].

Heartburn can occur as the growing fetus pushes up on the mother’s internal organs, creating pressure on the lower esophageal sphincter. Helpful suggestions are to avoid spicy or greasy foods, consume liquids separately from meals, eat small frequent meals, and avoid lying down or exercising immediately after meals. Antacid tablets may also help.

The hormones of pregnancy can alter the muscle tone of the gastrointestinal tract and cause constipation; this may lead to hemorrhoids if there is much straining with bowel movements. In order to help prevent this, women should take care to consume adequate fiber during pregnancy, preferably from whole grain foods, fresh fruits and vegetables, and legumes. Bulk-forming laxatives may also provide some relief. Water intake must be adequate. Keeping active during pregnancy can be helpful.

While most cravings women experience during pregnancy are not harmful, neither do they have any basis in physiological need. However, some women develop cravings for nonfood items, a condition known as pica. Clay, dirt, laundry starch, and freezer frost are some of the substances most often craved. These items can cause toxicities, parasitic infection, or intestinal blockage. Women with diabetes can experience blood sugar abnormalities if large amounts of starch are eaten. If nonfood items replace nutritious foods in the diet, nutrient deficiencies can occur. Women with pica are also often found to be anemic. It is not known whether pica is the cause of the anemia or if the reverse is the case.

High-Risk Pregnancies

Gestational diabetes mellitus (GDM) is a condition of poor glucose tolerance diagnosed during pregnancy. Although blood glucose control usually returns to normal postpartum, women diagnosed with GDM are at higher risk for type 2 diabetes later in life. Other consequences of GDM include increased risk for preeclampsia and complications during labor and delivery. Infants born to mothers with GDM are at higher risk for some birth defects, macrosomia (larger than average birth weight), and related outcomes such as shoulder dystocia (obstruction during labor).

Women at high risk for GDM include those with a family history of diabetes, overweight, age over 35, a previous pregnancy affected by GDM, or from high-risk ethnic groups, such as Hispanic, Black, Native American, South or East Asian, and Pacific Islanders. People from these groups should be screened with a 50-g, 1-h, oral glucose challenge as early as possible in pregnancy. Other women are usually screened between weeks 24 and 28 of gestation.

Medical nutrition therapy for GDM includes meeting calorie needs as appropriate for recommended weight gain, carbohydrate control (40–45% of total calories coming from carbohydrates spread out evenly through the day), avoidance of concentrated sweets, high-fiber intake, avoidance of excess weight gain, and moderate exercise. Regular blood glucose monitoring by the patient is recommended. If diet and exercise fail to bring blood glucose levels under control, insulin may be necessary. A team approach is required, including the patient, the physician, a registered dietitian, and a diabetes educator.

Gestational hypertension is high blood pressure first diagnosed in pregnancy, usually around week 20 of gestation. This may progress to preeclampsia, a condition of hypertension and proteinuria. Women with preeclampsia are at high risk for preterm delivery and progression to eclampsia, a life-threatening condition characterized by convulsions, coma, and death. The exact cause of preeclampsia is unknown though it seems to be related to abnormal implantation followed by oxidative stresses that reduce blood flow to the placenta. In this light, preventive measures are limited, but women at their ideal body weight with diets that include healthy amounts of antioxidants and minerals are best prepared for pregnancy. The World Health Organization recommends daily calcium supplementation at doses of 1.5–2.0 g/day elemental calcium for pregnant women from populations with low dietary calcium intake to reduce the risk of preeclampsia [19]. Low-sodium diets are not beneficial for preventing or treating preeclampsia. Once preeclampsia is diagnosed, dietary measures are largely ineffective at controlling blood pressure, and treatment usually relies on pharmaceutical methods.

A multifetal pregnancy requires weight gains higher than for a singleton pregnancy. The IOM have provided *provisional* guidelines for gestational weight gain with multiple fetuses for women of normal weight and women with overweight or obesity. They stated that there was insufficient information to develop guidelines for underweight women. Guidelines for weight gain at term for multifetal pregnancy according to prepregnancy BMI are normal weight, 37–54 lb. (17–25 kg); overweight, 31–50 lb. (14–23 kg); and obese, 25–42 lb. (11–19 kg) [5].

Bariatric surgery as a treatment for obesity has increased in recent years, and many patients are women of reproductive age. The changes in gut physiology and potential for micronutrient inadequacy associated with bariatric surgery mean that there are specific considerations for women prior to conception, during pregnancy, and in the postpartum period. These considerations include timing of pregnancy, contraceptive choice, advice on food intake, nutrition supplementation, monitoring nutritional status, clinical follow-up of pregnancy (including diabetes screening and weight gain during pregnancy), and breastfeeding [20].

Nutrition for Lactation

Breast milk is the gold standard for human nutrition [21]. The decision to breastfeed is often influenced by external factors, such as the support, or lack thereof, by family, friends, and health professionals; by work, school, or family responsibilities; and by the woman's knowledge of the benefits of breastfeeding.

Women should be provided with information regarding the benefits of breastfeeding. They should be given this information early in pregnancy and throughout the pregnancy. Benefits for the mother include increased levels of oxytocin, leading to increased uterine contractions, reduced postpartum bleeding, faster return of the uterus to prepregnancy size, and delayed return of menstruation. Women who breastfeed their infants also have improved bone density, reduced risk of breast and ovarian cancer, and reduced risk of rheumatoid arthritis.

Many women are concerned that they may not be able to breastfeed, but they should be assured that the vast majority of women are physically able to produce enough milk for their infants and that breast milk is produced on demand, i.e., the more often they feed their infants, the more breast milk they will

produce. Breastfeeding is medically contraindicated in only a few conditions: active tuberculosis, illegal drug use, HIV or AIDS (in developed nations), and galactosemia in the infant.

Nutritional needs during lactation can be provided by a carefully selected diet. Energy needs are increased by 500 kcal/day over prepregnancy needs, but some of these calories may be provided by maternal fat stores. Once breastfeeding is established, moderate calorie restriction and moderate exercise are acceptable ways to reduce postpartum weight without affecting the quality of breast milk quality and volume or infant growth [22]. Vitamin and mineral status in the lactating mother generally does not affect the quality of breast milk, unless deficiencies are prolonged and severe. There may be an increased need for some vitamins and minerals during lactation to support the mother's nutritional status. DRIs for selected nutrients are presented in Table 2.2. Additional information is provided in the table in Chap. 39. Women who are breastfeeding should, as during pregnancy, avoid eating fish known to contain high levels of mercury as described in the previous section on “[Food Safety During Pregnancy](#).”

Nutrition for the Postpartum Period

Practitioners can use postpartum visits as an opportunity to encourage women to develop strategies to return to or achieve a healthy BMI. These visits are also the ideal time to discuss preparations for future pregnancies, such as those described above for preconception.

Referrals for Services

There are some circumstances in which referrals for additional services should be made. Pregnant women with inappropriate weight gain, hyperemesis gravidarum (excessive nausea and vomiting), multiple gestations, chronically poor diets/dietary restriction/disordered eating, phenylketonuria, chronic diseases such as hypertension and diabetes, or a history of substance abuse may be referred to a RDN for medical nutrition therapy [15]. Lactating women who are experiencing difficulty with the breastfeeding process should be referred to a certified lactation consultant. In the USA, the Supplemental Food Program for Women, Infants, and Children (WIC) serves low-income pregnant, breastfeeding, and postpartum women, as well as children up to 5 years of age who are at high risk for medical or nutritional problems. Through WIC, women can receive health referral services, supplemental food vouchers, and nutrition assessment, education, and counseling.

Summary

For most women, good nutrition during pregnancy, including increased energy needs, can be achieved through a carefully selected, varied, nutrient-rich diet. Good nutritional practices should begin in the preconception period. Women are best prepared for pregnancy when they are at or near their ideal body weight, eat a nutrient-dense diet, take a folic acid supplement, and abstain from tobacco and alcohol. Weight gain during pregnancy should be based on prepregnancy BMI. Some women may benefit from iron or calcium supplements. Pregnant women should take extra precautions to avoid any foodborne illness. Common complaints of pregnancy may often be relieved through dietary measures. Herbal supplements have not been shown to be safe. High-risk pregnancy conditions, such as gestational diabetes, preeclampsia, and multifetal pregnancy, are best managed by a multidisciplinary health team. Maternal nutrition continues to be important in the postpartum period, particularly for mothers who choose to breastfeed their infants and to help with postpartum weight loss. Women with chronic disease, who are low income and at high risk for poor nutrition, or who have concerns about breastfeeding should be given referrals for specialized services. Women in high-risk pregnancies should be referred to a RDN for medical nutrition therapy.

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Suggested Further Readings

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