

Unit II
Chapter 4

Nutrition during pregnancy and lactation

NUTRITION DURING PREGNANCY

A normal, full-term pregnancy is 40 weeks, and can range from 37-42 weeks. It's divided into three trimesters. Each trimester lasts between 12 and 14 weeks, or about three months. Each trimester comes with its own specific hormonal and physiological changes. Being aware of the ways that growing baby is affecting a women's body will assist to better prepare for these changes as they happen.

The first trimester lasts from the first through the 13th week of pregnancy. Although a women may not look pregnant during the first trimester, but the body is going through massive changes as it accommodates a growing baby.

In the first few weeks following conception, hormone levels change significantly. The uterus begins to support the growth of the placenta and the fetus, the body adds to its blood supply to carry oxygen and nutrients to the developing baby, and the heart rate increases.

The first trimester is vital for the development of baby .The baby will develop all of its organs by the end of the third month, so this is a crucial time. It's important to maintain a healthy diet.

The second trimester (weeks 13-27) is the most comfortable period of time for the majority of pregnant women. Most of the early pregnancy symptoms will gradually disappear.

An abdomen will start to look pregnant, as the uterus will grow rapidly in size. While the discomforts of early pregnancy should ease off, there are a few new symptoms to get used to. Common complaints include leg cramps and heartburn. Women might feel more hungry and her weight will increase and backache may become evident.

The third trimester lasts from the 28th week through to the birth of your baby.

During the third and final trimester of pregnancy, a baby's eyes, bones, organs, brain and lungs are developing and the nutritional needs are increasing. In addition to a baby's rapid growth, a women's body is preparing to give birth. A healthy diet, packed with nutritious foods, is just as important now as it was during the first two trimesters of pregnancy.

A balanced diet is important in promoting the growth and development of the fetus and safeguarding the health of the mother. Recommended Dietary Allowances (RDA) for a pregnant women-(ICMR 2010) are given below in table for determining the nutritional needs-

Table- Nutritional requirements in pregnancy

Energy (Kcal/d)	Protein (g/d)	Fat (g/d)	Calcium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Vit-C (mg/d)	Folate (μg/d)
1900+35	55+23	20+10	600+600	21+14	10+2	40+20	200+300
=2250	=78	=30	=1200	=35	=12	=60	=500

Meeting Nutritional Requirements

A diet throughout the lifecycle help women to begin pregnancy without deficiencies and meet increased demands of nutrients. Fortified foods with iron, iodine, folic acid or vitamin A may be promoted through nutrition counseling and mass media wherever available and affordable. Nutrition counseling should be done not only to pregnant women but also to their husband and other members.

Dietary diversification can be promoted by promoting kitchen gardening so as to make foods available and affordable, wherever feasible. Motivate women and their families to take small steps to improve maternal diet. Dietary diversification can be implemented by following food groups recommendations as given in Table 1. For calculations of nutritional requirements Reference women is aged between 18-29 years, non pregnant and non lactating (NPNL) and weighs 55kg with a height of 1.61m and a body mass index (BMI) OF 21.2, is free from a disease and physically fit for active work.

Dietary guidelines

- Small and frequent feedings should be taken. Fasting or missing meal should be avoided.
- Consumption of eggs and other non vegetarian foods help in meeting increased protein requirement.
- More fibre should be included in the diet to prevent constipation which is a common problem during pregnancy. 5-6 serving of fruits and vegetables should be included in the daily diet.
- Diet should be rich in calcium to prevent osteomalacia. Calcium supplements may also be taken. A minimum of 3 glasses of milk should be taken.
- Iron rich foods should be taken to prevent anemia and to build up iron stores in the foetal body. Iron supplements may be taken. Heme iron is better absorbed. Inclusion of green leafy vegetables ensures minerals like calcium and iron.
- Diet should contain optimum amount of sodium. In case of edema or hypertension, sodium is restricted.
- Raw fruits and vegetables are to be included in the diet to meet vitamin C and fibre requirement.
- Plenty of water should be taken to keep the bowels regular.
- Fatty rich foods, fried foods, excessive seasoning, strongly flavored vegetables may be restricted in case of nausea and gastric distress.
- Too much of coffee or tea.
- The diet should include fish, flax seed and soybean to meet the requirement of ω -3 fatty acids.
- Fluids should be taken between meals rather than along with the meals.
- Adequate amount of calories should be taken so that enough fat is deposited during pregnancy which is required for lactation.

Sugar substitute should be used in moderation during pregnancy as the fetus are inconclusive.

- Weight reduction regimens are not recommended because the defect of ketosis on the fetus.

Special Considerations in pregnancy

- **Nausea**

Nausea during pregnancy is typically one of the most experienced and complained about symptoms that women report. Up to 70 percent of expectant mothers experience nausea at some point during early pregnancy

To help prevent and treat nausea during pregnancy, try avoiding foods and smells that trigger your nausea. Eating smaller meals more frequently throughout the day instead of three big meals. Drinking less water/fluids with your meals, and instead, drink them between meals. Eating drier, plain foods such as white Rice, dry toast, or a plain baked potato instead of richer, creamier foods. Sniffing ginger or lemons, or drinking ginger ale or lemonade, which can help ease.

- **Vomiting**

Vomiting during pregnancy is a common occurrence, with as many as **60-70% of pregnant women** experiencing vomiting. The specific cause of vomiting during pregnancy is not

known. The fluctuation in hormone levels during pregnancy could be one contributing factor. Hormones slow down digestion, which could trigger heartburn, indigestion, and acid reflux, which are all considered possible symptoms of pregnancy and potential triggers of vomiting during pregnancy.

- **Heart burn**

Early in pregnancy, the body produces large amounts of the hormones progesterone, which tend to relax smooth muscle tissues throughout your body, including those in gastrointestinal (GI) tract. As a result, food sometimes moves more slowly through your system, resulting in indigestion issues of all kinds, from that bloated, gassy feeling to heartburn. To avoid heartburn do not eat and drink food at the same time. Avoid foods triggering heart burn.

- **Constipation**

Constipation occurs when there is abdominal pain or discomfort, difficult and infrequent bowel movements, and the passage of hard stools. Unfortunately, constipation affects approximately half of all women at some point during their pregnancy.

To prevent constipation consume a high fibre diet containing whole grains and legumes, fruits and vegetables and fluids. It is advised to exercise regularly.

A sample meal plan for a day is given for your reference

Meal Timing	Food Item	Amount
Early Morning-	Tea Homemade snack	1 cup 2 no.
Breakfast-	Milk Vegetable Poha Fruit	1 glass 1 bowl 1 medium
Mid Morning-	Fruit	1 no.
Lunch-	Salad Roti/Rice Moong dal Bottle gourd Curd	1 Plate 3 no./3 ladle 1 bowl 1 bowl 1 bowl
Evening Tea-	Tea Vegetable Upma Nuts	1cup 1 bowl 5-6no.
Dinner-	Salad Roti / Rice Mixed dal Matar paneer	1 Plate 3 no./3 ladle 1 bowl 1 bowl
Bed Time-	Milk	1 glass

NUTRITION DURING LACTATION

A woman's nutritional requirement are maximum during lactation compared to any other age group, hence the diet should be balanced and meet the requirement.

Lactating or breastfeeding mothers generally need more calories to meet their nutritional needs of both baby and mother and breast milk production. 450 to 500 kilocalories (kcal) additional calories per day is recommended for well-nourished breastfeeding mothers, compared with the amount they were consuming before pregnancy (approximately 2,300 to 2,500 kcal per day for breastfeeding women verses 1,800 to 2,000 kcal per day for moderately active, non-pregnant women who are not breastfeeding).

In addition to providing nutrients, breast-milk has several special components such as growth factors, enzymes, hormones and anti-infective factors. The amount Exclusive breast-feeding (EBF) ensures safe nutrition to the infant and all round development. An average Indian woman secretes about 750 ml of milk per day during the first 6 months and 600 ml/day subsequently up to one year. Breast-milk provides good quality proteins, fat, vitamins, calcium, iron and other minerals.

Mother-infant contact should be established as early as possible (immediately after birth) by permitting the infant to suck at the breast. Mothers can breast-feed from as early as 30 minutes after delivery. Colostrum should be made available to the infant immediately after birth. Feeding honey, glucose, water or dilute milk formula before lactation should be avoided and the infant

should be allowed to suck, which helps in establishing lactation. Colostrum should not be discarded, as is sometimes practiced.

Weight gain beyond that desirable for body size, should be avoided. When he baby is weaned, the mother must reduce her food intake in order that obesity may be avoided.

Table- Nutritional requirements in lactation

	Energy (Kcal/d)	Protein (g/d)	Fat (g/d)	Calcium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Vit-C (mg/d)	Folate (μ g/d)
0-6 months	1900+600 =2500	55+19 =74	20+10 =30	600+600 =1200	21	12	40+40 =80	200+100 =300
6-12 months	1900+520 =2420	55+13 =68	20+10 =30	600+600 =1200	21	12	40+40 =80	200+100 =300

A sample meal plan for a day is given for your reference

Meal Timing	Food Item	Amount
Early Morning-	Tea Homemade snack	1 cup 2 no.
Breakfast-	Milk Porridge Nuts/ Dates	1 glass 1 bowl 5-6 no.
Mid Morning-	Seasonal fruit	1 no.
Lunch	Salad Roti/ Rice Dal/Kadhi/Sambhar Green Leafy vegetable Vegetable Raita	1 Plate 3 no./ 3 ladle 1 bowl 1 bowl 1 bowl
Evening Tea	Tea/ Milk Paushtik Ladoo	1cup 1no.
Dinner	Salad Roti/ Rice Dal/Sambar Bottle gourd Sweet dish	1 Plate 3 no. / 3 ladle. 1bowl 1 bowl 1 bowl