Nutrition in Pregnancy



Objectives

- To produce, healthy, normal weight infants while minimizing health risks to the mother.
- To determine appropriate weight gain during pregnancy for normal, under and overweight women.
- To recognize the additional energy, vitamin and mineral requirements for women during pregnancy.
- To understand changing nutritional needs during pregnancy



Eating Right During Pregnancy

- 40 weeks of pregnancy are a magical time
- Keeping a healthy lifestyle throughout pregnancy as well as before and after
- Important steps to a healthy pregnancy include:
 - ✓ Eating a balanced diet
 - Gaining the right amount of weight
 - Enjoying light regular physical activity
 - ✓ Taking a vitamin and mineral supplement
 - Avoiding alcohol, tobacco or other harmful substances.

Importance of Good Nutrition During Pregnancy

- Important before, during and after pregnancy
- Good control of weight, blood pressure and blood glucose – increase chances of healthy, normal weight, term infant
- Affect fetal and placental growth
- Affect maternal well being and maternal outcome

Importance of Good Nutrition During Pregnancy

- Not getting enough micro nutrients cause
 - * low birth weight
 - premature birth
 - other fetal problems

Folic acid, iron, omega-3 fatty acids, Vitamin A, Calcium, Vitamin D and Iodine

Baby's growth and development depend on nutrients from mother



Fluid During Pregnancy

- The need for fluids increase to 3 liters/day for:
 - → Increase mother's blood volume
 - → Regulating body temperature
 - → Producing amniotic fluid to protect and cushion the fetus
 - → Combat fluid retention
 - → Prevent urinary tract infection

Weight Gain During Pregnancy

- Pattern of weight gain is important
- Low per-pregnancy weight and maternal weight gain are risk factors for:
 - Growth retardation
 - Low birth weight baby
 - Increase perinatal death
- Too much weight gain is also risky
- Women should not diet during pregnancy; this may deprive the fetus of critical nutrients



Nutrition-Related Concern

Complication of pregnancy and their dietary implication includes:

- Morning sickness
- Craving
- Heartburn
- Constipation
- Edema & leg cramps
- Gestational Diabetes
- Pregnancy-induced Hypertension

Morning Sickness

- Morning sickness nausea 7 vomiting associated with pregnancy
- Occur at any time (commonly 1st trimester 12/16 weeks)
- No cure but the symptoms can be reduced
- Eat small, frequent, easily digested meals, drinks between meals, avoid fatty and odors that trigger nausea.



Craving

- Most women crave a certain type of food (sweet, salty) rather than a specific food.
- One plausible explanation change in smell and taste
- Pica = craving a non-food items (dirt, clay,ice, laundry)
- Rainville (1998) hypothesized that pica relate with deficiency of essential nutrient (iron,calcium)
- Can cause toxicity, intestinal obstruction



Heartburn



- Heartburn gastric reflux, occur when sphincter above the stomach relaxes, allowing acids into the esophageal
- Hormone in pregnancy relaxed smooth muscleincrease heartburn (common during the night)
- Enlargement of the uterus pushes up on the stomach
- Limit food intake before bedtime, drink fluids between meal, sitting upright, elevating the head of the bed, avoid trigger foods (spicy food).

Backflow of acid and stomach contents into the esophagus







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Constipation

- Pregnancy hormones that cause smooth muscle to relax (slow gut motility)
- Slow the movement of material through the large intestine
- Reduce constipation by consuming 25-35g/day of fiber and plenty of fluids

Gestational Diabetes

- Insufficient insulin production or insulin resistance that increase bloods glucose level during pregnancy
- Condition resolves after birth occurs
- Risk of delivering a large baby and needing a C-section
- Uncontrolled blood glucose level may lead to increase fetal morbidity and risk for type II diabetes for mother and child.



DIETARY TIPS FOR GESTATIONAL DIABETES



Eat small, regular meals every 3-5 hours



Prioritise the right type of carbohydrates



Choose low Glyceamic Index foods



Limit intake of junk food & chose healthy fats



Edema & Leg Cramps

- Raised hormone levels cause women to retain water during pregnancy, leading to swelling and bloating (edema).
- Fluid retention is most pronounced in feet, ankles, and calves because growing uterus puts pressure on the veins that carry blood back from lower body
- Little swelling notice when exercised, been standing or walking a while, been eating a lot of salty foods or drinking caffeinated beverages.

Edema & Leg Cramps

- The TWO most concerning conditions during pregnancy that can cause swelling:
- > Preeclampsia
- Blood clot



Preeclampsia

- A condition during pregnancy where there is a sudden rise in blood pressure and swelling
- Generally develops during the third trimester
- Early symptoms: Hypertension and proteinuria
- Because the blood vessels are narrower than normal, blood flow is limited.

Preeclampsia

- Complication:
- Poor blood flow to the placenta
- Placenta abruption
- Eclampsia condition where high blood pressure results in seizures during pregnancy.



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Blood Clot

- Deep venous thrombosis (DVT) a blood clot that forms in a deep vein of the leg, calf or pelvis.
- Venous thrombosis can be serious because the blood clot may break off and travel in the bloodstream until it gets lodged in another part of the body, such as the lung.
- This is called a pulmonary embolism (PE) and can be life threatening.

Nutrition Requirement for Mothers

The First Trimester

- A time of rapid cell division, organ development and preparation for the demand of rapid fetal growth that occur during 2nd and 3rd trimester.
- During pregnancy, the recommended energy intake increases by approximately 300–500 extra calories per day, especially during the second and third trimesters.
- Critical nutrients during this phase include:
- → Protein
- → Folic acid
- → Vitamin B12
- → Zinc

The 2nd and 3rd Trimester

- Energy intake especially important since 90% of fetal growth occur during the last half of gestation.
- Critical nutrients during this phase include:
- → Protein
- → Iron
- → Calcium
- → Magnesium
- → B vitamin
- → Omega-3 fatty acid





NUTRITION PREGNANT

I TRIMESTER

FOR THE DEVELOPMENT OF THE PLACENTA, FETAL MEMBRANES

CALCIUM MILK, DAIRY PRODUCTS, BROCCOLI, GREEN VEGETABLES AND FRUITS JUICE



MANGANESE TURKEY, PORK, ALMONDS, OATMEAL, EGGS, RAISINS, BANANA, CARROT, SPINACH



FOR THE PREVENTION OF SICKNESS AND BOWEL PROBLEMS (WITH 5 WEEKS)

PLANT PROTEIN

NUTS, SOY, LEGUMES, YOGRUT, CHEESE, PRUNES, RAISINS, KEFIR



II TRIMESTER

FOR INTENSIVE GROWTH OF THE FETUS

PROTEINS FISH, CHICKEN, BEEF, COTTAGE CHEESE, VEGETABLES, FRUITS



FOR THE DEVELOPMENT OF VISION AND HEARING, STRENGTHENING BONE SYSTEM

VITAMINS A, D, FE CABBAGE, VELIOW PEPPER, CARROT, EGG, BEEF LIVER, COD LIVER, CEREALS, BEANS,



CALCIUM DAIRY PRODUCTS, CHEESE, NUTS, GREEN VEGETABLES, CABBAGE, SPINACH, BROCCOLI



III TRIMESTER

STRENGTHENING THE BODY BEFORE CHILDBIRTH

CARBOHYDRATES

FRESH VEGETABLES AND FRUITS, BERRIES, FISH, NUTS, CEREALS: RICE, OATS, BUCKWHEAT, MILLET



FOR THE DEVELOPMENT OF THE BRAIN AND BONES OF THE UNBORN CHILD

CALCIUM

DAIRY PRODUCTS, CHEESE, NUTS, GREEN VEGETABLES, CABBAGE, SPINACH, BROCCOLI



FATTY ACIDS FISH, OILS: LINSEED, SOYBEAN, OLIVE; EGG, NUTS, SEAFOOD, CAVIAR



Carbohydrate

RNI for pregnancy	50 – 60%
Dietary Sources	Rice, noodles, whole grain breads, cereals, milk
Function	Main energy supply Promotes weight gain of the fetus, placenta
Precaution	Limit refined sugar intake (sweet beverage and food) that can increase risk of gestational diabetes mellitus.

Protein

RNI for pregnancy	15-20%
Dietary Sources	Meat, poultry, fish and egg,milk Vegetarian: soybean milk, soy product, beans, nuts and legumes
Function	For growth an maintenance of tissue and overall metabolism Greatest need is in 3 rd trimester
Precaution	Commercial protein supplements are not recommended



Fat

RNI for pregnancy	20 -30%
Dietary Sources	Meat, poultry
Function	Fat deposits in the fetus increase from 2% at mid-pregnancy to almost 12% at term Fat required by newborn for temperature regulation and as energy source
Precaution	More completely absorbed during pregnancy causing marked increase in cholesterol.

Fat- Omega-3

- Important for fetal's brain and eye development
- Encourage take at least 8 to 12 ounces (240-360g) each week
- Good sources of Omega-3 fatty acids as following:
 - → Soybean oil
 - → Omega 3 enriched eggs (EPA + DHA)
 - → Fish oil (EPA + DHA)
 - → Nuts/seed (walnut)
 - → Canola oil

IRON

RDA for prgenancy	27 mg/day
	Meat, fish, dark green leafy vegetable (spinach), legumes (bean, dried fruits and seed), eggs
Function	 Supports hemoglobin production for oxygen transport to mother and fetus. Helps in the formation of fetal red blood cells Development of the fetal brain and organs Prevent anemia
Inadequate intake	 Anemia (fetus take maternal iron) Increase rate of low birth, preterm birth and death
Diet alone	Not sufficient
Recommended	Prenatal supplements contain 27 mg

ZINC

RDA for prgenancy	1 st trimester : 5.5 mg, 2 nd trimester: 7mg, 3 rd trimester: 10mg
Sources	Beef, Shellfish, Green peas, Mlik, Lamb
Function	Synthesis of nucleic acids DNA and RNA and important in reproduction
Inadequate intake	Lead to major obstetrics complication and congenital malformation in fetus
Diet	Vegetarians may need more zinc
Recommended	Zinc supplementation is recommended when iron supplementation >30 mg/day as large amount iron supplement zinc absorption

IODINE

RDA for prgenancy	200 ug/day
Sources	Seaweed, fish, eggs, meat, milk, dried legumen, dried fruits
Function	 To prevent hypothyroidism of mother and fetus during pregnancy Brain development Proper growth and development
Inadequate intake	 Mental retardation, growth hearing and speech problems (hypotyroidism)

Folic Acid/ Folate

RNI for prgenancy	600 MCG
Sources	Asparagus, Broccoli, spinach, dry cereal, dried beans
Function	Critical in the first 28 days for development of neural tube For synthesis nucleotide and cell division to prevent serious birth defects
Inadequate intake	Neural tube defects (spina bifida)
Diet alone	Not sufficient Need to take fortified folate foods
Recommended	Important for any women who prepare to pregnant and during pregnant period

Vitamin C

RDA for prgenancy	80 mg/day
Sources	Vegetable and fruits (Citrus, tomatoes, strawberries, broccoli, leafy greens)
Function	Aids in formulation of connective tissue and vascular functioning
Inadequate intake	Results in infections, preterm birth
Recommended	Supplements should take together with iron supplements

Vitamin B12

RNI for prgenancy	2.6 ug/ Day
Sources	Animal product (meat), dairy product, eggs, fish
Function	Essential for red blood cells, healthy functioning of nervous system
Inadequate intake	May cause neurological damage in a child

Vitamin A

RNI for prgenancy	800 ug/day – incresae by 10% in pregnancy
Sources	Animal products, beta carotene fruits and vegetables
Function	Critical during fetal development – involved in growth, vision, protein synthesis.
Inadequate intake	Increased low birth weight, growth retardation, preterm birth

Food to Avoid

- Raw or unpasteurized milk
- Raw or partially cooked eggs
- Undercooked meat
- Increase caffeine content

A Food Guide for Pregnant Women



Caffeine intake

- Caffein is a stimulant that crosses the placenta and reaches the fetus
- 1 or 2 cups coffee a day is very likely causing no harm (Not more than 200 mg per day)
- High amount slightly increase the risk of miscarriage, preterm birth and low birth weight

Precautions! Caffeine does pass into breast milk, consumption during lactation should be limited

Caffeinated beverages

Type of Caffeinated beverages (150 ml)	Caffeine	
Coffee	115 mg	
Iced Tea	40 mg	
Cola	15 mg	
Hot chocolate	4 mg	

Conclusion

- Pregnant mother are encourage to get balance diet to ensure sufficient nutrients for fetal growth and development.
- Those extra nutrients that essential included extra energy, protein, health fat (omega-3 fatty acid), variety vegetable and fruits (folate, vitamin B and C), milk (calcium) and adequate fluid intake.

