**Community Medicine**

**Nutrition during Pregnancy& Lactation**

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**Factors affecting Maternal Nutrition**

* General nutritional status prior to pregnancy
* Maternal age
* Maternal parity
* Cultural and psychosocial factors
* Lactation
* Weight gain during pregnancy
* Metabolic or other complications of pregnancy

**Maternal Weight Gain**

* Changing viewpoints
* Increased weight gain reduces chances of IUGR
* No optimal weight gain recommendation fits everyone
* Recommendations are cited in terms of range and are based on RDA’s

**Optimal Weight Gain**

* Personalized approach is best depending on patient’s height, pre-pregnancy weight, bone structure, activity level
* *Usual 12-17 kg weight gain*
* Fetus 3.5 kg
* Placenta 750 g
* Amniotic fluid 4 kg
* Uterus 1 kg
* Breasts 1 kg
* Stored Fat 2kg
* Total weight gain 12.5 kg

**Semester by Semester weight gain**

* Ist Trimester 1-2.5 kg
* 2nd Trimester 0.5 kg per week
* 3rd Trimester 0.5 kg per week
* The emphasis is on a gradual and consistent pattern in weight gain.

**Red Flags**

* Mid pregnancy weight gain should be at least 5 kg
* Sudden sharp increases ( wt gains of 1.5-2.5 kg in one week) may indicate excesssive fluid retention
* Inadequate gain = less than 1 kg per month during 2nd and 3rd trimesters
* Excessive gain = greater than 3kg per month

**Weight Gain**

* 1st Trimester 1-2 kg
* may lose weight if N & V
* 2nd & 3rd trimester 0.5 kg/wk
* Dieting is never recommended during pregnancy ; ketoacidosis may result leading to fetal distress.

**Risks for obese expectant mothers**

* Obese defined as > 20% or more above recommended pre-pregnant weight
* Increased risk of LGA
* Increased risk of hypertension
* Increased risk of gestational diabetes
* Weight gain does not guarantee adequate nutrition

**Suggested Caloric Intake**

* For average size women, average activity level, age 15-45
* non pregnant 2200 cal./ day
* pregnant 2500cal./day (+300)
* lactation 2700cal./day (+500)

**Daily food portions should be increased to include:**

* 6-11 servings of breads and other whole grains
* 3-5 servings of vegetables
* 2-4 servings of fruit
* 4-6 servings of milk and milk products
* 3-4 servings of meat and protein foods
* 6-8 large glasses of water, and limit soft drinks or coffee to no more than 1 cup per day

**Important Nutrients**

Protein

* Protein for growth and maintenance of tissue and overall metabolism.
* Greatest need is in last trimester
* Pregnant women require 60g daily
* Half of requirement can be met with adding 4 cups milk daily.
* Meat, poultry, fish and eggs are also good sources of protein
* Commercial protein supplements are not recommended

Fat

* Valuable energy source
* Fats are more completely absorbed during pregnancy causing marked increase in serum lipids, and cholesterol.
* Fat deposits in the fetus increase from 2% at mid-pregnancy to almost 12% at term.
* RDA < 30% of daily intake with less than 10% from saturated fats

Carbohydrates

* Provide energy, bulk and protective substances. Maintains caloric intake and protects against acidosis.
* Hugely increased needs, especially during the last 2 trimesters.
* Promotes weight gain of the fetus, placenta and other maternal tissues. Milk , fruit, vegetables, whole grain breads and cereals are good sources.

Calcium and Phosphorus

* Involved in mineralization of bones and teeth, energy and cell production and electrolyte acid-base buffering.
* Fetal bone and teeth calcification primarily occurs in last 2-3 months.
* If calcium levels are too low, demineraliztion of mothers bones and teeth may occur.
* 4 c milk daily or equivalent to supply 1200 mg calcium/1200mg phosphorous daily
* Excess phosphorous can be a problem. Avoid snack foods, processed meats and cola drinks.

Iodine

* 175mg day intake recommended
* Use iodized salt
* Prevents goiter

Sodium

* Sodium intake is never restricted during pregnancy
* Excessive salt intake, however should be avoided

Zinc

* Affects growth
* RDA for pregnancy 15 mg
* Sources; shellfish, milk, liver, wheat bran

Magnesium

* Essential for cell metabolism and structural growth, essential electrolyte
* RDA 320 mg
* Sources; milk, whole grains, beet greens, nuts, legumes, tea

Iron

* Anemia during pregnancy often caused by low iron stores
* Anemia may also be due to poor intake of nutrients aiding utilization and absorption of iron; ascorbic acid, vitamins B6 and B12 folic acid, copper and zinc.
* Fetal demands for iron are HIGH, especially during the 3rd trimester.
* Sources; lean meats, green leafy vegs, eggs, whole grain and enriched breads and cereals, dried fruits, legumes,
* RDA 30mg/day Supplements are often necessary during the 2nd and 3rd trimesters.
* Caution; Iron preparations cause nausea! Also constipation, dark stools Take with Vitamin C

Vitamins

* D: Increased need, RDA 10ug / day
* E: Increased need 10 ug/day Newborns need large amounts; found in large amounts in breast milk
* C: Increased need, aids in formulation of connective tissue and vascular functioning. Citrus, tomatoes, cantaloupe, strawberries, potatoes, broccoli, leafy greens
* B: All increased, all found in milk, liver, enriched breads

Folic Acid

* Water soluble vitamin
* Found in fresh green leafy vegs, liver, yeast, peanuts.
* Women at risk for folate deficiency: Adolescents; taking Dilantin(phenytoin), multiple births; women who may not make adequate dietary choices
* RDA in pregnancy increased to 600 mcg

Vitamin and mineral supplementation

* Iron only necessary supplement
* Multiple gestation, cigarette smoker, alcohol and other drug abuse or those with poor diet may require general MVI supplementation
* Vegan and vegetarian may need B12 cyanocobalamin

Fluids

* Necessary for body’s biochemical reactions
* Carries substances, aids in temperature control
* Recommended intake 250 ml
* Diet sodas should be limited
* Caffeinated beverages are diuretics and should be limited

Pica

* Eating of substances not normally considered edible or of nutritional value
* Often occurs in low-socioeconomic areas
* Dirt, clay, laundry starch, freezer frost
* Some items can interfere with absorption of nutrients
* Non-judgmental approach ; re-education

Adolescents

* Nutritionally at risk
* Low pre-pregnant weight, low weight gain, smoking, excessive pre-pregnant weight, unhealthy lifestyle
* Adolescents who become pregnant less than 4 years after menarche are at highest biological risk and need to gain more weight to produce a baby of equal size to mature adolescent.
* Iron, calcium and folic acid are greatest concerns
* Counseling requires time, effort, consideration

Post-partum

* May take 6 months or longer for weight to stabilize
* Hg and RBC levels should return to normal within 2-6 weeks
* Increase fluids, fiber to avoid constipation
* If not lactating, may return to pre-pregnancy nutritional levels

Nursing Mothers

* Inadequate caloric intake can reduce milk amounts, although quality remains unaffected.
* Increase calories by 200kcals daily over pregnancy levels.
* 65 g protein daily
* Increase fluids –drink 250 ml every time breast feed
* Avoid foods that cause GI distress in infant