NSD 342 Exam 2 Study Guide

Preconception and Fertility

- **PMS – what nutrients may affect symptoms**
  - Presence of 5 of the following symptoms that are significant enough to disrupt work or social life for 3 menstrual cycles – fatigue, bloating, swelling of hands/feet, headache, tender breasts, nausea, craving for sweet or salty foods, depression, irritability, mood swings, anxiety, social withdrawal
  - Dysmenorrhea – lower abdominal cramps, bloating, back pain, headache, food cravings, irritability
  - Reduce caffeine intake and increase exercise
  - Take magnesium to reduce bloating and breast tenderness
  - Take calcium and Vitamin D to reduce irritability, depression, anxiety, headaches, and cramps
  - Vitamin B6 will reduce depressive symptoms
- **Nutritional culprits of infertility for men and women**
  - Body fat – high body fat/higher hormones and low body fat/lower hormones lower fertility**;** BMI <20 or >30 result in greater rates of infertility
  - Women – significant weight loss (over 10-15% body weight) accounts for 30% of infertility cases due to hormonal changes; fertility drugs less effective in underweight women
  - Men – greater than 10-15% weight loss can reduce sex drive, sperm number, and viability; greater than 25% weight loss in men causes spermatogenesis
    - Inadequate zinc or Vitamin D intake causes semen volume and testosterone levels to decrease
  - Planted based, low fat and high fiber diets aid in fertility
  - Low fat diets or isoflavones from soy aid in fertility
  - High caffeine and alcohol intake can cause infertility
  - Carontenemia can cause infertility
  - Poor iron status – increases risk of maternal iron deficiency anemia during pregnancy, low infant iron stores, and preterm delivery; 50% of US women have low iron at conception
- **Side effects of hormonal birth control**
  - HDL, TG's, total cholesterol, risk of blood clots, and stroke all increase
  - Some cause weight gain, bone mineral density down, glucose up, LDL up, bone density down
- **Nutrition interventions for PCOS and diabetes**
  - PCOS – improve insulin resistance with medications, exercise, weight loss, and diet modifications; improve blood lipids with exercise; improve diet (protein, omega 3s, whole grains, fiber, and MUFAs increase and saturated fat, trans fats, and GL decrease)

- Type 1 Diabetes – diets are controlled in carbohydrate content; insulin use and physical activity
    - Carbs raise insulin needs more than proteins and fats; insulin to carb ratios and carb counting is used
    - Replace simple sugars with reasonable amounts of artificial sweeteners; choose low glycemic index and high fiber foods; encourage brightly colored fruits and veggies; low fat meat and dairy products, fish, dried beans, and nuts/seeds
- Type 2 Diabetes – manage with diet, exercise, and oral medication to increase insulin production and insulin sensitivity
    - Diet – 50% carbs, less than 30% fat, and the rest protein; low glycemic index foods, low cholesterol, high fiber

- **Cluster of symptoms in PCOS (lipids, blood glucose, waist circumference, etc.)**
    - Weight gain, decreased breast size, thin hair, excess hair on face and body, acne, pelvic pain, anxiety or depression, infertility
    - High cholesterol, TG's, and glucose levels
- **Factors that affect fertility in males and females**

Both	Females	Males
• Weight loss greater than 10-15% of normal weight • Inadequate antioxidant status • Inadequate body fat • Excessive body fat • Extreme levels of exercise • High alcohol intake • Endocrine disorders • Structural abnormalities of the reproductive tract • Chromosomal abnormalities in sperm and eggs • Celiac disease • Oxidative stress • Severe psychological distress • Infection (STD usually) • Diabetes, cancer, etc • Some medications	• Recent oral contraceptive use (within 2 months) • Anorexia and bulimia • Vegan diets • Over 35 years old • Metabolic syndrome • PID • Endometriosis • PCOS • Poor iron stores • High-fiber diet	• Inadequate zinc status • Heavy metal exposure • Halogen and glycol exposure • Estrogen exposure • Sperm defects • Excessive heat to testes • Steroid abuse • High intake of soy foods

Pregnancy

- **Physiological changes of pregnancy**
    - Increase in blood volume by 50% which leads to hemodilution
    - Serum fat-soluble vitamins, TGs, cholesterol, and free fatty acids increase
    - Pulse rate increases
    - Blood pressure decreases in the 1st six months
    - Cravings for/aversions to foods, decreased ability to taste salt
    - GI motility decreases to improve absorption of nutrients; relaxed LES may lead to "heartburn" or constipation
    - Edema in legs and ankles (swelling)
- **Nutrition assessment for pregnancy**

- **Food/Nutrition history:** choose energy dense foods, have 3 good meals/day, eat large portions of food and feel full, eat snacks, drink plenty of juice and milk, exercise to build muscle
    - Add 340 kcal/day in 2nd trimester and 452 kcal/day in 3rd trimester
    - Carbs should be 50-65% of total kcal, fats should be 20-35%, and protein should be the rest
    - 600mcg folate/day, 300mg EPA and DHA/day, 28g fiber/day, 9 cups of fluid/day, salt to taste, exclude alcohol, limit caffeine to <4 small cups/day
- **Biochemical data, medical tests, and procedures**
- **Anthropometric measurements:** people at a normal weight should gain 25-35lbs (1lb/week), underweight should gain 28-40lbs, overweight should gain 15-25lbs, and obese should gain 11-20lbs
- **Nutrition-focused findings**
    - **History:** underweight means smaller placenta and greater risk of having LBW infants; adolescents have greater risk of LBW infants, infant death, iron deficient anemia, and poor calcium and folate intake

- **Nutrition assessment and interventions for conditions of pregnancy**
    - **Hypertension:** no proteinuria or hyperinsulinemia; risk factors = obesity, central adiposity, increased risk for HTN and stroke later
    - **Preeclampsia:** causes oxidative stress, HTN, hormonal sypmtoms related to blood volume and pressure control, restricted nutrient-rich blood flow to fetus and only cure is delivery
        - **Signs:** sensitivity to bright light, HTN, urinary output down, blurred vision, nausea
        - **Risk factors:** 1st pregnancy, obesity, underweight, older than 35, insulin resistance, HTN, diet inadequate in antioxidants and calcium
        - **Intervention:** healthy preconception diet, calcium supplements, Vitamin E and C supplements, lot of fruits and veggies, no restriction of sodium, low glycemic index foods, moderate exercise
        - **Consequence:** early C-section, acute renal dysfunction; fetal consequence is growth restriction and respiratory distress syndrome
    - **Gestational Diabetes:**
        - **Signs:** excessive thirst, urination, hunger
        - **Risk factors:** obesity, weight gain between pregnancy, underweight, older than 35, low fiber diet
        - **Intervention:** routine screening with 1 hour GTT at 24-28 weeks; fasting glucose should be >95 mg\dl; achieve glycemic control with calorie control and low GL; exercise to improve insulin resistance
        - **Consequence:** C-section, increased risk of preeclampsia, type 2 diabetes, HTN, obesity later in life, and risk of GDM in subsequent