Nutrition in the Life Cycle: Adolescence and Women’s Health

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Objectives
Upon completion of this lecture, the student will be able to:

• Describe key nutrition issues relevant to adolescents;
• Understand why women’s nutritional health is an issue;
• Discuss sex and gender differences of major nutrition related health issues;
• Describe nutrition factors and interventions related to major health issues that affect women (and men);
• Be aware of the current research agenda for women’s health.

Suggested Reading

• Prevention and Treatment of Type 2 Diabetes Mellitus in Children, with Special Emphasis on American Indian and Alaska Native Children. Pediatrics. 2003;112:328-347. (on reserve in the library)

Other Resources

• http://www4.od.nih.gov/orwh/index.html (NIH Office of Research on Women’s Health)
• http://www.nhlbi.nih.gov/whi/ (Women’s Health Initiative)

ADOLESCENCE

A. A time of significant growth and extraordinary nutritional needs

1. 20% of adult height
2. 50% of adult weight
3. In puberty, boys gain 2X lean body mass as girls

B. Typical adolescent diet

1. Consume more foods high in calories but low in required nutrients (foods with low nutrient density)
2. Foods that are low in nutrient density contribute > 30% of daily energy intake
3. Increases risk for inadequate protein and micronutrient intakes
4. Only 37% meet their dietary calcium needs
5. Soft drink consumption has increased 123% from mid 1970’s to mid 1990’s
6. Project EAT study (Eating Among Teens) (n=4746)

C. Overweight and obesity

1. 15% of 6-19 year olds are overweight
2. Overweight in adolescence =
   a. Body Mass Index (BMI) ≥ 95th percentile for age & sex
   b. Weight for Height ratio > 95th percentile
c. No definition of “obese” yet in adolescents

3. Nutrition therapy
   a. Goal: ~ 1 lb./wk, provide nutrients for linear growth and lean body mass
   b. Comprehensive assessment

D. Type 2 Diabetes Mellitus
   1. A new morbidity in children and adolescents
   2. Mexican Americans & African Americans at increased risk
   3. Nutrition therapy

E. Cardiovascular Disease
   1. Process of atherosclerosis starts at an early age & is linked to overweight
   2. Nutrition therapy

F. Eating disorders
   1. Anorexia Nervosa
      a. Criteria (DSM IV)
         i. Refusal to maintain body weight ≥ minimum normal weight for age & height
         ii. Intense fear of gaining weight
         iii. Disturbance in body image
         iv. Absence of 3 consecutive menstrual cycles
      b. Types
         i. Restricting type
         ii. Binge/purge type
   2. Bulimia Nervosa
      a. Criteria (DSM IV)
         i. Recurrent episodes of binge eating characterized by eating larger amounts of food, in a period of time (w/i 2hrs), than most people would eat during a similar period of time
         ii. Sense of lack of control during the eating episode
         iii. The binge & inappropriate compensatory behaviors occur at least 2X per week for 3 months
         iv. Self-evaluation is unduly influenced by body shape & weight

3. Female Athlete
   a. Triad
      i. Disordered eating
      ii. Amenorrhea
      iii. Osteopenia & osteoporosis
   b. General Nutritional Guidelines
      i. Develop good eating habits early in life
      ii. Maintain a healthy body weight
      iii. Ensure adequate daily intakes of Calcium, Iron, Zinc

**WOMEN’S HEALTH** = the prevention, diagnosis, and management of conditions that may:
- Be unique to women (e.g. menstruation, pregnancy, menopause)
- Be more prevalent in women than in men (e.g. eating disorders, breast cancer, diabetes mellitus, osteoporosis)
- Manifest differently in women than in men (e.g. heart disease, substance abuse, AIDS)
- Progress differently in women than in men
- Response to treatment may differ between women and men
- Historically clinical research has focused on men and been conducted by men

A. Heart disease
1. Incidence: 1/3 women ≥ 60 y.o.
2. Mortality: #1 cause of death among postmenopausal women
3. Over 250,000 deaths/yr from CHD
4. Risk Factors
   a. Dyslipidemias
   b. Estrogen withdrawal
   c. ↓ HDL, ↑ Total Chol, ↑ LDL, ↑ TG
   d. HTN (80% of Black women)
   e. Obesity
   f. Type II DM (Women 4-6X ↑ vulnerability to CAD)
   g. ↑ Homocysteine
   h. CCEPT Use
      i. RR = 1.29 (95% CI: 1.02 – 1.63) (WHI)
5. Nutrition Therapy
   a. National Cholesterol Education Program (NCEP) Step I & Step II Diets
   b. DASH Diet
   c. Tx of HTN by diet: ↓ sodium, ↑ potassium, wt loss, ↓ ETOH
   d. Foods & Nutrients
      i. Antioxidants: vitamin E
      ii. B vitamins – folate, B6, B12
      iii. Whole grains
      iv. Soy products

B. Type II DM
1. Small gender difference in adults: 8.9% women, 8.3% men
2. About 80% are obese
3. Prevention & early detection particularly important in the tx of women
4. Landmark Trials
   a. Diabetes Control Complications Trial: for Type I DM
   b. United Kingdom Prospective Diabetes Study for Type II DM
   c. Diabetes Prevention Program

C. Osteoporosis
1. 18% women aged ≥ 50, 3-6% men
2. Osteopenia: 37-50% women, 28-47% men
3. Over 1.5 mill osteoporotic fx / yr
4. Risk of fx > women, risk death from fx > men
   a. Risk factors:
      i. Estrogen/testosterone defic., Caucasian or Asian, small or thin body,
inactivity, ETOH & tobacco use, chr liver or renal dz, hyperthyroid,
DM, chronic meds, inadeq Ca intake, vit D defic
5. Prevention & Treatment: The Three-Legged Stool
   a. Estrogen
   b. Weight-Bearing Exercise
   c. Calcium and Vitamin D (400-600 IU)

D. Cancer
1. 2nd leading cause of death in American women
2. Since 1987, more women die yearly from lung CA than breast CA, which was major cause of
CA death in women for 40 yrs.
3. Three phases of nutrition therapy
   a. During treatment
   b. During recovery
c. After recovery

E. Phytoestrogens
   1. Phytoestrogens = weak estrogen-like compounds found in plants that bind the estrogen receptor & have both hormonal & antihormonal effects
   2. Isoflavones = 1 type of phytoestrogens found in chickpeas & legumes, esp. soybeans, also red clover & black cohosh
   3. High use peri & postmenopausal women
      a. > $100 mill in supplement sales 2001
   4. Claims: ↓ menopausal sx, prev CVD & osteoporosis, ↑ breast health
   5. Evidence
   6. *The position of the American Dietetic Association and Dietitians of Canada:* The use of phytoestrogens in the form of dietary soy supplements is discouraged for women who have breast cancer, who are at high risk for breast cancer, or who are taking tamoxifen, a hormone-blocking drug that is chemically related to estrogen.

F. Women’s Health Initiative: Prevention in postmenopausal women
   1. Randomized, controlled clinical trial (n=67,000)
      • Effect of low-fat diet on prev breast & colon CA & CHD
      • Effect of Ca & Vit D supp on prev osteop fx & colon CA
   2. Observational study (n=100,000)
      • Identify new risk factors & biol markers that predict dz
   3. Community prevention study (n=20,000)
      • Evaluate strategies for adopting healthful behaviors in diverse populations of women: diet, nutr supplements, smoking, physical activity, early detection

**Key Take Home Points**

★ Understand what nutrition issues are of concern in adolescents;
★ Understand why women’s health is an issue and what the agenda is;
★ Identify diseases and conditions that are more prevalent among women than men;
★ Recognize when food and nutrient intake is a factor in preventing or controlling disease;
★ List basic dietary interventions in CVD, Type II DM, Osteoporosis, and CA;
★ Know when intensive nutrition management (MNT) is indicated;
★ Define “phytoestrogen”
   – Describe what current empirical evidence shows
   – Know the position of key associations concerning contraindications for increasing the use of phytoestrogens and soy foods in the diet.

**Sample Exam Questions**

1. Which of the following is a “calcium waster” for which excessive intake among teens may increase the risk of osteoporosis:
   a. Diet pills
   b. Diet soda
   c. High fat foods
   d. Candy and other sweets
2. The DASH diet is designed to increase intake of all the following nutrients except for?
   a. Calcium
   b. Magnesium
   c. Potassium
   d. Zinc
3. Which of the following dietary supplements might you recommend to a menopausal woman for
prevention of cardiovascular disease?
   a. Vitamin C  
   b. Iron  
   c. B-complex multivitamin  
   d. Omega-3 fatty acid (fish oil) capsules

Answers
   1. b  2. d  3. c

Selected References


