

NUTRITION THROUGH THE LIFE SPAN

OBJECTIVES/RATIONALE

Nutrition is important to health and wellness throughout ones lifespan. Knowledge of changing nutritional requirements is important to deliver quality health care. The student will develop a diet plan for individuals in various life stages.

TEKS: 121.24 1H, 6A, 6B, 6D, 7C, 8A

TAKS ELA 1, 3, 4, 5, 6
Science 2

KEY POINTS

Nutrition through the life stages – all healthy people need the same nutrients during each life stage, just in different amounts.

- I. Infancy – Birth to one year
 - A. Energy needs
 1. Basal metabolic rate is two times that of an adult
 2. requires approximately 100 kcalories/kilogram of body wt.
 3. Birth weight doubles in five months and triples by one year.
 - B. Nutritional requirements
 1. Protein
 - a. Essential for growth
 - b. Excess – causes acidosis, dehydration, diarrhea, elevated blood ammonia and urea, and fever.
 2. Vitamins and minerals – Requirements in proportion to body weight, for most are more than double an adults
 3. Water
 1. Normally provided in breast milk or formula
 2. Easily lost by hot weather, diarrhea or vomiting.
 - C. Breast milk
 1. Colostrum – “first milk”
 - a. Milk like secretion from the breast present before milk is produced.
 - b. Rich in antibodies
 2. Bifidus factors - Substances present that favor growth of *Lactobacilus bifidus*
- II. Childhood – One year to puberty
 - A. Energy needs vary depending on growth and activity
 1. inactive children may become obese.
 2. Strict vegetarians may have difficulty meeting energy needs.
 - B. Nutritional needs
 1. Protein – total needs increase but decrease gradually in relation to body weight

2. Vitamins and minerals – needs increase with age .
3. Meal planning
 - a. following the Food Guide Pyramid will fully meet nutritional needs of most children.
 - b. Select a variety of foods from each food group.

III. Adolescence – Puberty to adulthood

- A. Growth patterns of males and females become distinct
 1. growth spurt at 10 – 11 for females
 2. growth spurt at 12 – 13 for males
 3. in females fat assumes a larger percentage of body weight.
 4. in males muscle and bone (lean body mass) increases more than in females.
- B. Energy requirements – Energy and nutritional needs are greater than at any other time in the life span except during pregnancy and lactation
 1. Depend a great deal on rate of growth, body size and physical activity.
 2. Vitamins and minerals
 1. RDA for vitamins increase
 2. Iron
 - a. Females need for iron increases with menses and the RDA remains high until menopause.
 - b. Males need for iron increases due to the development of lean body mass, but falls to preadolescent values early in adulthood.
 3. Calcium – needed for bone development and values reach their peak during this time.

IV. Pregnancy and Lactation

- A. Pregnancy - begins with the fertilization of the egg and ends with parturition
 1. Characterized by periods of rapid cell division and structural development.
 2. The developing baby gets all its nutrients from the mother.
 3. Organs and tissues are extremely vulnerable to nutritional deficiencies during critical development periods
 1. Neural tube defects and folate deficiencies
 4. Weight gain
 5. Energy requirements increase 300 kcalories above a non-pregnant female during the 2nd and 3rd trimester.
 6. Nutritional needs
 1. Protein – 10 grams/day above a non-pregnant female
 2. Vitamins and minerals needs may be increased
 - a. Vitamins associated with energy metabolism
 - b. Vitamins and minerals associated with blood production and cellular growth

- c. Vitamins and minerals associated with bone development
 - d. Supplements may be needed to meet increased demands
 - B. Lactation – the production and secretion of breast milk
 - 1. Energy requirements
 - a. An additional 650 kcalories/day are needed during the first six months.
 - b. Most nursing mothers need at least 1800 kcalories/day to get the nutrients and energy needed during this time.
 - 2. Vitamins and minerals
 - a. With the exception of iron an adequate amount of most nutrients can be obtained from a well balanced diet.
 - b. An adequate amount of water needs to be obtained to prevent dehydration.
 - c. Nutritional deficiencies tend to limit the quantity of milk produced, not the quality. Milk quality is maintained at the mother's expense.
- V. Adulthood – last from adolescence to old age
- A. Anatomical and physiological changes come to a standstill
 - 1. Degenerative changes begin to occur around 30
 - B. Energy requirements decrease but are related to activity
 - C. Nutritional requirements are set in the RDA's
- VI. Senescence – the process of growing old
- A. Divided into two groups because the needs may be very different
 - 1. 51 – 70
 - 2. 71 and older
 - B. Degenerative changes continue
 - 1. body composition
 - a. bone and muscle mass is lost and fat is gained
 - b. may be minimized by good nutrition and physical activity
 - 2. GI Tract
 - a. Slower motility caused by lose in strength of intestinal wall and its elasticity.
 - b. Atrophic gastritis – impairs digestion and absorption of nutrients
 - 3. Sensory lose – may impair willingness to eat due to lose of taste and smell
 - C. Other changes
 - 1. Psychological
 - 2. Socioeconomic

3. Medications taken for diseases and disorders may affect digestion and absorption of nutrients
- D. Energy – requirements decrease but are still dependent on physical activity
- E. Nutritional requirements
 1. Water requirements must be met to prevent dehydration
 2. Protein – needed to prevent protein muscle wasting and maintain a healthy immune system.
 3. Carbohydrate
 - a. Needed to prevent using body proteins as an energy source.
 - b. Provides a source of fiber
 4. Fat – intake needs to be limited but not eliminated altogether.
 5. Vitamins and minerals – may require supplements if not consumed in diet according to RDA's

ACTIVITIES

- I. In small groups research a life stage and present the findings using a multimedia format.
- II. Using the information obtained, develop a nutritional diet plan for a client in researched age group.

MATERIALS NEEDED

Multimedia equipment
Internet access
RDA tables

ASSESSMENT

Team Rubric
Oral Presentation Rubric
Completion of the diet plan

ACCOMMODATIONS

For reinforcement, the student will design a poster listing the life stages and their nutritional needs.

For enrichment, the student will design a brochure to highlight the nutritional needs of a pregnant female or older adult living in a long-term facility.

REFLECTIONS
