NMNEC Concept: **Nutrition**

Mega-Concept: Health and Illness

Category: Homeostasis and Regulation

Concept Name: Nutrition

Concept Definition:
Factors that facilitate and/or impair the processes of taking in nutrients, assimilating and using them to maintain body tissue and provide energy.

Scope/Categories/Types:
Scope: The scope of this concept can be visualized as a continuum with malnutrition on both ends (under nutrition and over nutrition) and optimal nutrition in the middle (Escott-Stump, S. (2017, p. 145). Optimal nutrition occurs when all nutrients are available and consumed in balanced amounts to meet the person's needs. Nutritional problems may be a deficit, excess, or imbalance of the essential components of a balanced diet (Harding, et al., 2020, p. 849)

Categories:
- Undernutrition is a result of an inadequate diet or diseases that interfere with appetite and assimilation of ingested food.
- Overnutrition is the ingestion of more nutrients than is required for the individual's needs (Harding, et al., 2020, p. 851).

Types:
- Protein-calorie malnutrition (PCM) primarily occurs when nutritional needs for calories or proteins are not met. Secondary PCM is due to an alteration or defect in ingestion, digestion, absorption or metabolism. Older terms still in use in some clinical setting are primary or secondary protein-calorie malnutrition (PCM), marasmus, and kwashiorkor. Cause-based terms are preferred: Starvation-related malnutrition (primary PCM), Chronic disease-related malnutrition (secondary PCM), and Acute disease related malnutrition (Harding, et al., 2020, p. 852).
- Specific nutrient imbalances occur when there is an inadequate intake of calcium or iron as well as an excessive intake of sodium. The International Micronutrient Malnutrition Prevention and Control (IMMPaCt) program was established by the Centers for Disease Control and Prevention (CDC) in 2000 to help eliminate deficiencies in iron, vitamin A, iodine, folate, and zinc (Centers for Disease Control and Prevention, 2015).

- Obesity is primarily due to the ingestion of excess calories. Secondary obesity can result from various anomalies, metabolic problems, or medical disorders Obesity is an excessively high amount body fat with consequences that extend beyond the physical changes. Obesity is a global problem and is a major factor for the leading causes of death (Harding, et al., 2020, p. 869).

Risk factors:

Nutritional balance affects all individuals regardless of age, gender, race, or socioeconomic status.

- **Populations at High Risk:**
  - Age: very young and very old
  - Gender: women who are childbearing or postmenopausal (Escott-Stump, 2017, pp. 146-147).
- **Individuals at High Risk:** Contributing Factors: Socioeconomic status, physical illnesses, incomplete diets, and drug-nutrient interactions all contribute to the development of malnutrition (Harding, et al., 2020, p. 852).
  - Genetics: Some individuals are at risk based on their genetic heritage, for example, those prone to develop metabolic syndrome or lactose intolerance. Physical illnesses-Surgery, injury, immobilization malabsorption syndrome and other GI diseases all interfere with normal food consumption (Harding, et al., 2020, p. 852).
  - Socioeconomic status: Factors can affect the external forces involved in an individual's or family's food security or food availability. Limited resources may lead to food insecurity. Food insecurity is a major public health problem because it decreases the availability of high nutrient food options. Those affected usually choose less expensive, high fat foods with nutrient deficiencies (Harding, et al., 2020, p. 852).
  - Culture: Personal choices and cultural factors can influence food preferences, i.e., fast food meals or a vegan diet.
  - Lifestyle factors: An individual's interpersonal relationships, learned coping mechanisms, and alterations in mood can affect nutrition.
  - Medical disorders: A patient with a nutritional problem may have one or multiple risk factors. Common conditions that affect nutrition are those that impair oral intake, increase the need for calories, impair the absorption of nutrients, or lead to an increased calorie intake (Escott-Stump, 2017, p. 149).

Physiologic Processes and Consequences:

Physiologic Processes:

- Intake: Oral intake involves the abilities to ingest foods and fluids as well as chew and swallow. Deglutition involves the mouth, pharynx, and esophagus; it is the mechanical portion of ingestion (Harding, et al., 2020, p. 829).
- Digestion: Further mechanical and chemical breakdown in gastrointestinal tract is needed to digest the nutrients.
- Absorption: Nutrients need to be absorbed through specific portions of the intestines and enter into the blood stream (Harding, et al., 2020, p. 830).

Physiologic Consequences:

- Common Deficits:
    - Calories: failure to thrive
    - Protein: poor wound healing
    - Minerals: iron deficiency anemia and osteoporosis (Harding, et al., 2020, p. 8530.
- Common Excesses:
    - Calories: metabolic syndrome
    - Fats: coronary artery disease (Escott-Stump, 2017, p. 154).

Assessment:

- **Subjective:**
    - History of intake, appetite, allergies, family history, and social/cultural factors.
    - History of medical conditions, medications, and treatments. (Wilson & Giddens, 2017, pp. 85-92).
- **Objective:**
    - General observation of the integumentary system (dry skin, rashes, brittle nails, hair loss), mouth (ulcerations, changes in the tongue, and tooth decay), muscles (loss of mass and weakness), and central nervous system (confusion and irritability).
    - Anthropometric measurements (body mass index and skinfold thickness) (Wilson & Giddens, 2017, pp. 85-92).
- **Diagnostic Tests:**
    - **Lab tests:**
        - Proteins (serum albumin, prealbumin, and transferrin)
        - Red blood cells (total count and hemoglobin)
        - Electrolytes (potassium and calcium)
        - Glucose (capillary/serum glucose and Hemoglobin A1C)
        - Lipids (cholesterol and triglycerides) (Wilson & Giddens, 2017, p. 93).

- **Scans:** dual energy x-ray absorptiometry (DXA) scan of bone integrity (Harding, et al., 2020, p. 1441).

Clinical Management:

- **Primary Prevention:**
  - For the nursing diagnosis of readiness for enhanced nutrition, nursing interventions include: teach and reinforce healthy nutritional intake and healthy weight across the lifespan. (Ackley, et al., 2020, pp. 648-650).
- **Secondary Prevention:**
  - For the nursing diagnosis of imbalanced nutrition: less than body requirements, nursing interventions include: screen for possible nutritional problems, improve access to food retail outlets, and reduce food insecurity (Ackley, et al., 2020, pp. 648-650).
- **Tertiary Prevention:** includes collaboration with health team members
  - For the nursing diagnosis of Feeding Self-Care deficit (Ackley, et al., 2020, pp. 787-789), nursing interventions are to assist with or delegate feeding.
  - For the nursing diagnosis of imbalanced nutrition: less than body requirements, nursing interventions include: weigh daily, teach about nutrition and supplements, insert /assist with the insertion of enteral or parenteral feeding tube, as well as administer and monitor responses to feedings (Ackley, et al., 2020, pp. 651-656),
  - For the nursing diagnoses of - Obesity (Ackley, et al., 2020, pp. 663-666), and Ineffective Health management (Ackley, et al., 2020, pp. 452-455), nursing interventions include: teach about nutritional therapy and exercise, teach about behavior modification strategies, administer/monitor responses to medications, as well as provide perioperative care for bariatric procedures.

Interrelated Concepts:

Nutrition is interrelated with nearly all of the concepts. Additionally, nutrition plays a role in many body functions such as glucose regulation, hormonal regulation, immunity, clotting, tissue integrity, development, and thermoregulation. Culture and spirituality are also important considerations as they influence dietary patterns and preferences (Escott-Stump, 2017, p. 153).

- **Development:** The ability to obtain, ingest, and digest nutrients was well as the nutritional needs vary across the lifespan.
- **Fluids and Electrolytes**: Since fluids and electrolytes are ingested and digested with or in foods, problems with nutrition could be related.
- **Metabolism:** Imbalances of nutrients can affect the chemical and hormonal processes that occur in the body.

- **Elimination:** Nutrients that are not ingested or digested may influence the processes of elimination.
- **Mobility:** Problems with mobility will affect the amount of calories used by the body, which needs to be balanced with nutritional intake.

Model Case:

Mary Williams is a 62-year-old, recently widowed, who has poorly controlled type 2 diabetes, stage 4 CKD, and class II obesity. She was overweight as a child and adolescent she states her entire family was overweight. She was never able to lose the excess weight gained with each of her three pregnancies. She had a career as a legal assistant and spent most of her free time involved in her children's activities or watching television. Mary states she has not really exercised since high school. She currently lives in a one-bedroom apartment within a long-term senior health care center. Shortly after moving to her new residence, she experienced acute heart failure (HF), the HF was resolved but she was informed that her kidneys are declining. The recent adverse health events have motivated her to follow medical recommendations for improved health. She has been following a controlled carbohydrate diet and takes insulin based on her meal intake with 3 months of success. Mary's story illustrates the complexity of this concept from the standpoint of the long-standing effects of overweight and obesity starting in childhood (Adapted from: Escott-Stump, 2017, p. 154).

New Mexico Nursing Education Consortium (NMNEC) Required Exemplars:

- **Undernutrition:**
  - In hospitalized patients, 30% to 50% are considered malnourished.
  - The prevalence for malnutrition for older adults range from 3% (community-dwelling) 30% for older adults in rehabilitation settings (Harding, et al., 2020, p. 851).
- **Overnutrition:**

  Approximately 40% of adults in the United States are obese. "One in 10 children becomes obese as early as age 2 to 5. Reversing the childhood obesity crisis is key to addressing the overall obesity epidemic" (Harding, et al., 2020, p.869).
  - Obesity increases the risks for developing chronic diseases, such as type 2 diabetes, heart disease, and some cancers. Also, obesity increases complications during pregnancy and leads to a higher risk for an early death (Healthy People 2020).
  - During the past 20 years in the U.S., there has been a dramatic increase in obesity.
  - "After decades of rising obesity rates among adults, the rate of increase is beginning to slow, but the rates are still far too high."

Optional Exemplars:

- Vitamin and mineral deficiencies
- Malabsorption disorders (i.e., celiac disease)
- Food safety
- Protein-Calorie Malnutrition
- Anorexia Nervosa
- Hyperlipidemia (Escott-Stump, 2017, p. 154).

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