Tennessee CTE

Nutrition Science & Diet Therapy (2022)

Professional Standards and Safety 1

1 **Career Development Plan: Create a career development plan outlining activities that will increase employment opportunities for a nutrition science candidate including:** 1.1

- a Educational opportunities, 1.1.A
- b Entry-level job opportunities, 1.1.B
- c Volunteer plans to enhance the career experience, and 1.1.C
- d Labor market data, including economic and demographic trends in nutrition related occupations. 1.1.D

2 **Ethics: Describe the code of ethics for dietetic practitioners published by the Academy of Nutrition and Dietetics or other health and nutritional organizations.** 1.2

3 **Safety and Sanitation: Compile and critique safety and sanitation procedures related to handling, preparing, storing, and serving food from industry-approved technical manuals and government fact sheets. Identify and review common laboratory safety procedures including but not limited to prevention and control procedures. Incorporate safety procedures and complete a teacher made safety test with 100 percent accuracy.** 1.3

Nutrition and Health Overview 2

1 **Optimum Nutrition: Explain the importance of a balanced diet in the achievement of optimum nutrition. Compare and contrast nutritional needs of a normal healthy diet with the needs of a client being treated for and/or recovering from illnesses.** 2.1

2 **Body Mass Index: Define BMI, list the steps and information necessary to calculate BMI, and identify the four weight categories. Explain how dietitians and health care workers use BMI in the evaluation of their clients.** 2.2

3 **Basal Metabolic Rate: Define BMR and list the steps and information necessary to calculate the energy needs and ideal body weight of a client.** 2.3

Nutrient Metabolism 3

1. **Major Metabolic Pathways: Create a model and/or graphic illustrating the major metabolic pathways used to produce energy for the body. Explain the chemical processes that occur at each stage in the pathway. Categorize each stage as an anabolic or a catabolic reaction, citing relevant evidence from academic or medical materials. Stages include:** 3.1
   - a Glycolysis 3.1.A
   - b Kreb's cycle 3.1.B
   - c Electron transport 3.1.C
   - d Anaerobic glycolysis 3.1.D
2. **Energy Balance: Demonstrate the ability to determine energy balance using standard tools and equations to calculate Estimated Energy Requirements (EER). Determine the energy content of an individual's diet. Based on the client's EER and calculated caloric intake, predict the effect on the client's weight. Calculate the following:** 3.2
   - a Physical Activity Level (PAL) 3.2.A
   - b Total Energy Expenditure (TEE) 3.2.B
   - c Energy Expenditure (BEE) 3.2.C
   - d Thermic Effect of Food (TEF) 3.2.D
   - e Metabolic Equivalents (METs) 3.2.E

Nutrients 4

1. **Properties of Water: Create a model or graphic that illustrates the scientific properties of water. Explain the functions of water in its relation to food, digestion, and maintenance of the body.** 4.1
2. **Structure of Carbohydrates: Describe the molecular structure of carbohydrates in relation to their function in food, food preparation, and the body using domain-specific terms. Create a graphic illustration/model to compare and contrast the differences in complex and simple carbohydrates.** 4.2
3. **Properties and Composition of Lipids: Analyze the properties and composition of lipids in relation to their functions in food preparation and to the body. Compare and contrast the composition of saturated and unsaturated fats. Explain the role of cholesterol in the body. Define and identify appropriate levels of total cholesterol, triglycerides, HDL and LDL.** 4.3
4. **Molecular Structure of Proteins: Describe the molecular structure of proteins and identify essential and nonessential amino acids. Compare and contrast complete and incomplete proteins by analyzing the functions of protein in food and their importance in the body. Research nutritional diseases related to insufficient protein. Describe ways in which protein is used in food preparation.** 4.4
5. **Major and Trace Minerals: Using NIH Fact Sheets, differentiate between the major and trace minerals, food sources of each, and health conditions associated with inadequate and excessive intake of both.** 4.5

	6 **Vitamins: Use NIH Vitamin Fact Sheets to investigate the chemical properties of watersoluble and fat-soluble vitamins. Classify each vitamin and its chemical properties, identify food sources for each vitamin, and explain the main role of vitamins in the human body. Suggested Labs: Vitamin C Titration (using pipettes); Fat Soluble Vitamins.** 4.6
Clinical Nutritional Assessments and Diagnosis 5	1 **Nutritional Assessments: Compare and contrast the types of data collected, the insights they give into the nutritional status of a client, and the limitations of the data for the following four types of nutritional assessments used by a registered dietitian or other trained health care professional.** 5.1 a Historical information 5.1.A b Anthropometric data 5.1.B c Physical examination 5.1.C d Laboratory tests 5.1.D
	2 **Nutrition Care Process: Demonstrate the Nutrition Care Process to clients and/or their families and verbalize the role it plays in the total health care of a client. Outline what occurs in each of the four phases of the process: nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation. Compile a list of frequently asked questions and their answers.** 5.2
	3 **Nutrition Assessment Data: Analyze nutrition assessment data, including lab data related to protein status, iron status, diabetes, heart disease, and kidney disease, gathered from client information to formulate nutrition diagnosis and an intervention plan.** 5.3
Diet Analysis 6	1 **Nutrient Intake: Quantify the nutrient intake of individuals based on food journals, observations, or other reports. Using appropriate databases, determine the intake of macro- and micro-nutrients. Compare the individual's results to the recommended intake of each nutrient. Explain why the data would or would not be sufficient to make dietary changes. Distinguish between nutrient dense and calorie dense foods.** 6.1
Nutritional Counseling 7	1 **Nutritional Counseling Techniques: List and summarize various counseling techniques, including a patient centered approach to counseling. Practice interviewing clients about dietary and lifestyle habits. Explain the purpose of follow up visits and the link to continuing care.** 7.1
	2 **Questioning: Describe the difference between open ended and closed ended questions. Demonstrate the use of open and closed ended questions during a mock nutritional counseling session.** 7.2

The Relationship of Nutrition to Specific Diseases 8

1. **Food Additives: Drawing on findings from food and health research, compare and contrast the advantages and disadvantages of the use of food additives in processed products. Investigate regulations governing the use of food additives established by the Food and Drug Administration (FDA) and U.S. Department of Agriculture (USDA). Suggested Labs: Conduct a sensory evaluation of foods with and without food additives** 8.1

2. **Common Digestive Problems: For each of the following common digestive problems, summarize symptoms, common causes, prevention strategies, and treatments. Explain how they can impact the digestion and absorption of nutrients in the digestive system.** 8.2

   a. Choking 8.2.A

   b. Vomiting 8.2.B

   c. Diarrhea, irritable bowel syndrome, colitis 8.2.C

   d. Constipation 8.2.D

   e. Belching and gas 8.2.E

   f. Heartburn and acid indigestion 8.2.F

   g. Ulcers 8.2.G

3. **Food Allergies and Intolerances: Differentiate between food allergies and food intolerances, describing the body's reaction to each. Research the eight most common food allergens and describe treatment for an allergic reaction. Use academic research and medical literature in order to:** 8.3

   a. Describe how the immune system of a person with a food allergy responds when exposed to the food allergen. Contrast this to reactions originating from a food intolerance. 8.3.A

   b. Outline precautions to take to avoid food allergens and/or foods to which an individual has an intolerance both at home and when eating out. 8.3.B

   c. Recommend food substitutes and recipe modifications to avoid problematic foods, citing specific reasoning and evidence to justify the recommendation. 8.3.C

4 **Obesity: Research obesity using academic research and authoritative nutrition and obesity sources to:** 8.4

- a Describe the need for prevention of obesity to begin at an early age. 8.4.A
- b Analyze the role of various factors, such as appetite-regulating hormones, gut microbiota, physical activity, and body composition, that affect energy homeostasis. 8.4.B
- c Describe the contributions of genetics and environment to development of obesity. 8.4.C
- d Justify the use of a research-based weight-loss strategy that ensures adequate nutrition. 8.4.D
- e Make a claim about the need for extreme measures (such as surgery) for extreme cases, supporting claim(s) with reasoning and evidence from research. 8.4.E
- f Compare and contrast the impact of lifestyle changes to increase physical activity and address stress and change environmental factors on an individual's weight. 8.4.F
- g Make recommendations on activities necessary for the maintenance of weight loss. 8.4.G

5 **Eating Disorders: Differentiate between the major eating disorders (anorexia, bulimia, binge eating) and other forms of disordered eating then:** 8.5

- a Describe the disease/condition, including symptoms and specific ways the body is affected. 8.5.A
- b Justify the role of nutrition as a contributor to the disease/condition and highlight specific dietary recommendations for minimizing those contributions. 8.5.B
- c Justify the role of nutrition in the treatment of the disease/condition, outlining a healthy eating plan and providing lists of specific foods/nutrients that should be included in the diet. 8.5.C
- d Make recommendations for other lifestyle changes and psychological interventions that will reduce the risk or aid in the therapy for the disease/condition. 8.5.D

6 **Vitamin Deficiencies: Research one of the following diseases linked to vitamin consumption issues. Summarize symptoms, common causes, prevention strategies, and treatments. Topics might include but are not limited to:** 8.6

- a Beriberi 8.6.A
- b Pellagra 8.6.B
- c Scurvy 8.6.C
- d Rickets 8.6.D

7 **Osteoporosis: Research osteoporosis and the role minerals play in the condition to:** 8.7

- a Describe osteoporosis, including symptoms and organ(s) affected. 8.7.A
- b Justify the role of nutrition as a contributor to the disease/condition and highlight specific dietary recommendations for minimizing those contributions. 8.7.B
- c Justify the role of nutrition as a in the treatment of osteoporosis, outlining a healthy eating plan and providing lists of specific foods/nutrients to reduce or exclude from the diet and those that should be included in the diet. 8.7.C
- d Make recommendations for other lifestyle changes that will reduce the risks or aid the therapy for osteoporosis. 8.7.D

8 **Nutrition and Cancer: Assess the impact of nutrition on cancer focusing on the body sites affected. Use academic research and medical literature to:** 8.8

- a Describe the disease/condition, including symptoms and organ(s) affected. 8.8.A
- b Justify the role of nutrition as a contributor to the disease/condition and highlight specific dietary recommendations for minimizing those contributions. 8.8.B
- c Justify the role of nutrition in the treatment of the disease/condition, outlining a healthy eating plan for those undergoing treatments such as chemotherapy and radiation, and providing lists of specific foods/nutrients that act as anti-promoters from the diet and those that should be included in the diet. 8.8.C
- d Make recommendations for other lifestyle changes that will reduce the risk or aid in the therapy for the disease/condition. 8.8.

9 **Diabetes: Research the impact of carbohydrates on diabetes, differentiating between Type 1 diabetes (T1DM) and Type 2 diabetes (T2DM). Cite specific textual evidence from NIH MedlinePlus to:** 8.9

- a Describe the disease/condition, including symptoms and organ(s) affected. 8.9.A
- b Justify the role of lifestyle factors as a contributor to the disease/condition and highlight specific dietary recommendations for minimizing those contributions. 8.9.B
- c Justify the role of nutrition in the treatment of the disease/condition, outlining a healthy eating plan that includes a variety of dietary patterns to reduce or exclude unhealthy eating. 8.9.C
- d Make recommendations for other lifestyle changes that will reduce the risk or aid in the therapy for the disease/condition. 8.9.D

10 **Cardiovascular Disease, Hypertension, and Stroke: Investigate the correlation between fats in the diet and coronary artery disease, hypertension, and stroke, citing evidence from academic research, medical literature, and NIH sources to:** 8.10

- a Describe the disease/condition, including symptoms and organ(s) affected. 8.10.A
- b Justify the role of diet as a contributor to the disease/condition and highlight specific dietary recommendations for minimizing those contributions. 8.10.B
- c Justify the role of nutrition in the treatment of the disease/condition, outlining a healthy eating pattern and providing lists of foods that should be included in the diet. 8.10.C
- d Make recommendations for other lifestyle changes that will reduce the risks or aid the therapy for the disease/condition. 8.10.D

11 **Nutrition and Renal Disease: Investigate the correlation between diet and renal disease. Identify markers of renal disease and how they are impacted by dietary intervention.** 8.11

- a Describe the disease/condition, including symptoms and organ(s) affected. 8.11.A
- b Justify the role of diet as a contributor to the disease/condition and highlight specific dietary recommendations for minimizing those contributions. 8.11.B
- c Justify the role of nutrition in the treatment of the disease/condition, outlining a healthy eating pattern and providing lists of foods that should be included in the diet. 8.11.C
- d Make recommendations for other lifestyle changes that will reduce the risks or aid the therapy for the disease/condition. 8.11.D

12 **Celiac Disease: Research the correlation between grain-based food consumption and celiac disease, citing evidence to:** 8.12

- a Describe the disease/condition, including symptoms and organ(s) affected. 8.12.A
- b Explain the digestive problems and the impact on digestion and absorption of nutrients. 8.12.B
- c Make recommendations for precautions that will reduce the risks of exposure in eating venues other than home. 8.12.C

13 **Acids and Bases: Define acidic and basic as they relate to nutrition. Create a pH scale including examples of common acidic and basic foods. Summarize symptoms, common causes, and treatments for heartburn, acid indigestion, and ulcers.** 8.13

Behavioral-Environmental Assessments: The Individual Community 9

1 **Community Nutritional Environment: Review the tools for assessing community nutritional environment. Select one tool that identifies existing problems in the local community. Make recommendations for informing community members about the problem(s).** 9.1

2 **Food Insecurity: Compare issues related to hunger and malnutrition, food insecurity, and food insufficiency locally, nationally, and globally. Describe short-term and sustainable development relief efforts used to combat these problems.** 9.2