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Whole Health Training: Food and Nutrition in Health and Wellbeing

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Learning objectives:

1. Describe the primary macronutrients in the diet and the nutritional relevance of each source.
2. Explain the difference between whole grains and refined grains and the different clinical outcomes related to each.
3. Identify the key recommendations from the 2015 Dietary Guidelines.
4. List the most important pieces of nutritional information on food labels and the expected label changes for 2018/2019.
5. Discuss the empirical research on various diets and summarize the takeaway message from this literature.

Food and Nutrition in Health and Wellbeing Videotaped Lecture

A. Nutrition Interventions: Study Types

1. Systematic review and meta-analyses
2. Randomized-controlled trial
3. Quasi-experiment
4. Cohort study
5. Case-control study
6. Cross-sectional survey
7. Case reports

B. Components of Food

1. Macronutrients (sources of energy)
 - a. Carbohydrates

- Whole grains vs refined grains: different clinical outcomes
 - 40-60% of diet to come from carbohydrates, especially whole grains
 - Sugar is carbohydrate with only energy and no nutrients; products high in sugar are the main source of calories in Americans age 2+ (juice and soda are sugar)
 - Fiber (from fruits, veggies, nuts, whole grains): very filling, feeds bacteria in gut, reduces cholesterol
- b. Protein
- Primarily from animal products but can get significant protein from plant based products as well (e.g., whole wheat pasta, peas, lentils, spinach, whole grain bread, corn on the cob, brown rice, sunflower seeds)
 - Why do you need protein?
 - Breaks into amino acids (21 total, 9 essential) that are used as “building blocks” for tissues and other bits and pieces
 - Muscle building and maintenance
 - Enzymes (metabolic reactions)
 - Signaling molecules (cross talk)
 - Satiety/weight loss (?)
 - Protein Dietary Guidelines
 - 0.8-1.0 g/kilo body weight (60-75 g/day)
 - 10-35% of total calories
 - Meat, fish, legumes, tofu, eggs, nuts, seeds, milk/dairy, grains, veggies
 - Complete protein (contains all 9 essential amino acids) from animal products (eggs, meat, fish, dairy)
 - Incomplete protein (contains some essential amino acids) comes from tofu, beans, veggies and other plant based products
- c. Fat
- Why do you need fat?
 - Fuel reserve (adipocyte storage)
 - Cellular membrane components
 - Inflammatory signaling
 - Nerve cell sheath (myelin)
 - Body temperature
 - Padding
 - Nutrient absorption (fat soluble A, D, E, K)
 - Recommended Intake
 - 20-30% total calories with <10% of calories from saturated fat
 - Replace solid fats with oils when possible
 - Limit foods with trans fat
 - Eat <300 mg of cholesterol

2. Micronutrients

- a. Vitamins and minerals mostly from plants; do not provide energy
 - b. Insufficient intake can lead to nutrition deficiency diseases: Rickets (D), Osteoporosis (Ca), Anemia (Fe, B12), Night Blindness (A), Neural Tube Defects—Spina Bifida (Folate)
 - c. Majority of people are Vitamin D deficient; need to get from diet or supplement
 - d. Vegetarians/vegans more vulnerable for Vitamin B12 deficiency; comes from animal based products; deficiency can lead to anemia and, later in life, to cognitive decline
3. Water
- a. Important for hydration/osmotic pressure, temperature regulation, lubrication and cushion for joints, protects spinal cord and other sensitive tissues/organs; rids body of waste through urination, perspiration, and bowel movements
 - b. Water guidelines
 - Women: at least 2.7 liters
 - Men: at least 3.7 liters
 - No upper limit (?)
 - Drink water and eat high water content foods

C. Dietary Guidelines

1. Document by USDA/HHS that is revised every 5 years
2. Provides advice for making food choices that promote good health, advocates a healthy weight, and helps prevent diseases
3. Forms the basis of Federal nutrition policy, education, outreach, and food assistance programs
4. Have been remarkably consistent throughout the last 50 years, despite criticism
5. 2015 Dietary Guidelines
 - a. Follow healthy eating pattern across lifespan
 - b. Focus on variety, nutrient density, and amount
 - c. Limit calories from added sugars and saturated fats
 - d. Reduce sodium intake
 - e. Drink alcohol in moderation

D. Food Labels

1. FDA is responsible for assuring foods sold in US are safe, wholesome, and properly labeled
2. Important nutrition facts on label
 - a. Servings per container (pay attention to serving size)
 - b. 20% or more is high per serving; 5% or less is low per serving
 - c. Calories provide a measure of how much energy you get from a serving
 - d. Nutrients listed on top of label should be limited while those listed at bottom need to be a priority in diet because people don't get enough (dietary fiber, Vitamin A, C, Calcium, Iron)
 - e. Ingredients are listed in descending order based on weight
3. New label expected July 2018/2019
 - a. Servings: larger, bolder type
 - b. Serving sizes updated
 - c. Calories: larger type
 - d. Updated daily values
 - e. New: added sugars

- f. Change in nutrients required
 - g. Actual amounts declared
 - h. New footnote
 - 4. Packaged food can make limited claims
 - a. Health claim
 - b. Nutrient content claim
 - c. Structure/function claim
 - 5. Organic label
 - a. Overseen by USDA
 - b. Sets fixed standards
 - c. May use organic pesticides
 - d. May not use GMOs
 - 6. Natural label: overseen by FDA; not meaningful label; refers to content, but not processing
- E. Which diet is optimal?**
1. Low fat (DASH) vs low carb/high protein vs high fat, etc.
 2. Bottom line is that quality of food is more important than the quantity of fat or carbs; “choose real food and avoid processed crap”
 3. Any diet can work for weight loss if taught with enthusiasm and persistence
 4. Lifestyle intervention leads to significant risk reduction (e.g., diabetes prevention)
 - a. Change nutrition behavior; discover strategies to implement mindful eating behaviors
 - b. Eating environment can influence diet: atmosphere, effort of obtaining food, time of day, social interactions, distraction
 - c. Food prep and cooking

References

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