

RD COURSE OUTLINE

NUTRITION SCIENCE

Macro Nutrients:

1. Carbohydrates, Fats, Proteins
 - Food Sources
 - Composition
 - Digestion, absorption, transport and metabolism
 - Recommended Daily Intake
 - Effect of Deficiency or excess

Micro Nutrients:

2. **Vitamins and minerals**
 - Food Sources
 - Composition
 - Digestion, absorption, transport and metabolism
 - Recommended Daily Intake
 - Effect of Deficiency or excess

Water:

- Water balance and recommended intake
- Fluid and Electrolyte balance
- Acid base balance

Principles of meal planning and diet planning guides:

- Dietary guidelines
- Components of dietary reference intakes:
 - a) estimated average requirements
 - b) recommended dietary allowance
 - c) adequate intakes
 - d) tolerable upper intake levels
- Functional foods (foods that provide health benefits beyond those of traditional nutrients) and their role in diet

Nutritional Assessments:

- Anthropometry
- Biochemistry

- Clinical
- Dietary

Energy Balance Body Composition and Weight management:

- Principles of weight mgt
- Evaluating and understanding fad diets
- Diet considerations after Bariartic surgery
- Eating disorders (anorexia, bulimia)
- Problems of underweight and weight gain strategies
- The role of physical activity in achieving appropriate weight

Fitness and Physical Activity:

- Components of fitness:
 1. Flexibility
 2. muscle strength and endurance
 3. cardio- respiratory endurance
- Recommendations for physical activity guidelines: frequency, intensity, time
- Benefits of exercise
- Nutrients to support physical activity
- The role of physical activity in maintaining fitness
- Aerobic and anaerobic activity
- Use of supplements as ergonic aids

Life cycle Nutrition

1. Diet during Pregnancy
 - Appropriate weight gain
 - Energy and nutrient needs
 - Energy intake and work load
 - High risk pregnancies
 - Common nutrition relating concerns during pregnancy eg: nausea, pica etc
 - Cultural factors related to diet during pregnancy
2. Diet during lactation
 - Energy and nutrient needs
 - Cultural factors related to diet during lactation
3. Diet during infancy
 - Nutritional needs

- Appropriate weight gain during first year
 - a) Breast feeding
 - Energy and nutrient needs
 - Importance of exclusive breast feeding
 - Practices that impact on lactation performance
 - Contraindications to breast feeding
 - Appropriate alternatives to breast feeding
 - b) Complimentary feeding
 - Initiating complimentary feeding
 - Introduction of animal milk
- 4. Diet during childhood and adolescence:
 - Energy and nutrient needs
 - Growth monitoring and promotion
 - Developing good eating habits
 - Childhood obesity
 - Food choices and health habits
- 5. Diet during adulthood and later years:
 - Energy and nutrient needs
 - Physiological changes and their impact on intake, digestion and absorption
 - Nutrition related concerns of older adults eg: macular degeneration, cognitive function etc

CLINICAL NUTRITION

NUTRITION AND NON-COMMUNICABLE DISEASE:

Prevention and Management of

- Obesity
- Cardiovascular Disease
- Hypertension
- Diabetes
- Cancer
- Osteoporosis

NUTRITION AND INFECTIOUS DISEASE:

- Tuberculosis

- Acquired Immune Deficiency Syndrome
- Infectious diseases of childhood

DISORDERS OF THE ALIMENTARY TRACT:

- Malabsorption
- GERD
- Peptic ulcers
- Surgery and gastric emptying
- Inflammatory bowel disease (Crohn's disease and ulcerative colitis)
- Irritable bowel syndrome ??
- Celiac disease
- Acute and chronic pancreatitis
- Acute and chronic liver disease
- Acute and chronic renal disease and Urolithiasis

FOOD INTOLERANCE AND ALLERGIES:

- Diagnosis and management

NUTRITIONAL ANEMIAS:

- Diagnosis and management

SYSTEMS OF NUTRITIONAL SUPPORT:

- Enteral and parenteral nutrition
- Management

DRUG NUTRIENT INTERACTIONS:

- Role of nutritionist/dietician in assessing possible drug nutrient interactions
- Major drug categories and food interactions (Statins, anticoagulants, anticonvulsants etc)

BEHAVIOR CHANGE COMMUNICATION:

- Application of behavior change communication in nutrition counseling eg: Stages of Change Model
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PUBLIC HEALTH NUTRITION

Prevalence and National Programs to Address:

- Low birth Weight
- Malnutrition in under 5yrs of age population
- Nutritional Anemias
- Iodine deficiency
- Vitamin A

Mother and child health programs:

- Assessing and evaluating the impact of the program
- Govt of Pakistan's Lady Health Program

Infectious diseases of childhood and their impact on nutrition:

- Diarrhea

WHO Recommendations for non communicable diseases in the population.

FOOD SCIENCE:

FRUITS AND VEGETABLES

1. Pigments
2. Effect of different procedures
 - ⇒ osmosis and diffusion
 - ⇒ ripening process
3. sources of nutrition
4. spoilage
5. impact of food preparation and cooking process on
 - ⇒ texture
 - ⇒ color
 - ⇒ flavor
 - ⇒ nutrients

EGGS

1. Structure and composition
2. evaluation of egg quality
3. changes in egg quality during storage
4. role of egg in various food products

MILK AND MILK STRUCTURE

1. structure and composition
2. evaluation of milk quality/ available sources in the market
3. storage
4. role of milk
5. composition of selected dairy products
6. effect of processing on milk products

MEAT & POULTRY & FISH

1. structure and composition and its effect on color, flavor and texture
2. choice of appropriate cooking method related to the cut of meat and for specific meat types

3. tenderizing method
4. storage

STARCH

1. chemical and physical structure of starch
2. process undergone by starch (in food processing)

⇒ **FLOUR**

1. production and properties and types

- ⇒ wheat flour
- ⇒ cereal flour
- ⇒ legume flour
- ⇒ cotton seed flour
- ⇒ soya bean flour

2. dough structure and factors affecting dough structure

LEAVENING AGENTS :

1. gases
2. chemical leavening agents
3. biological leavening agents
4. factors affecting the texture of baked products

SUGAR AND ALTERNATIVE SWEETENERS

1. Sugars

- ⇒ Chemical and physical properties
- ⇒ Sources
- ⇒ Functions in food

2. Alternative sweeteners

- ⇒ non nutritive sweeteners
- ⇒ nutritive sweeteners

3. Crystallization

- ⇒ Crystalline candy
- ⇒ Frozen dessert

FOOD SERVICE

- Introduction to food service Management
 1. Food service System and their development
 2. Organizational and Managerial approach to food service operation
 3. Administrative and personnel Management
- Quantity Food Production
 1. Preparation, Cooking and service techniques in food service operations
 2. Menu planning, recipe Standardization and portion control by using available computer software
 3. Purchasing receiving and storage on food service institutions
 4. Quality assurance in food service operation
- Financial Management in food services
 1. Concept of budget planning
 2. Cost control techniques and analysis
 3. Techniques of record keeping
 4. Use if computer for budgetary and records
- Sanitation and safety
 1. Food contamination
 2. Food safety and cleanliness
 3. Sanitation standards for food service personnel

4. Sanitation standards for physical plants and equipments
 5. Safety education for employee and customer
- Management of physical facilities
 1. Floor planning and layout of kitchen/ cafeteria
 2. Selection and proper use of kitchen equipment