



# EDO UNIVERSITY IYAMHO

Department of Nursing Science



## NSC 203 Community Human Nutrition

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Lectures: Thursday, 1:00 p.m. – 3:00 p.m. LT3, phone: (+234) 8068524872

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**Teaching Assistants:** *A. A. Ogunlade*

**General overview of lecture:** This course covers the basic concepts in nutrition such as, classification of food based on nutrient, functions of nutrients, the gastrointestinal tract, digestion, absorption and metabolism of nutrients, energy balance, types of food found in our locality, factors that influence our choice of food, the concept of adequate diet, food security, and nutritional need across the developmental milestones. It will focus also on the role of nutrition in the prevention, management, and care of various diseases as well as in promoting health.

**Prerequisite:** students are expected to have a background knowledge of agricultural science, biology and chemistry at the secondary level and first year of university study.

**Learning outcomes:** At the completion of this course, students are expected to:

1. Display an understanding of basic nutrition.
2. Demonstrate ability to use basic knowledge in nutrition to solving diet related health problems.
3. Show an understanding of the importance of nutrition in nursing practice.
4. Identify major nutrient requirements through life cycle.
5. Assess the nutritional status of an individual/community.

**Assignments:** the course is designed in such a way that the students will be assigned topics for term paper in addition to two written tests, group paper presentation and a Final Exam.

**Grading:** We will assign 5% of this class grade to term paper. Another 5% for the group paper presentation, 20% for the two tests, and 70% for the final exam. The Final exam will be comprehensive.

**Textbooks:** The recommended textbooks for this class are as stated:

Title: *Nutrition essentials for nursing practice*

Author: S. G. Dudek

Publisher: Wolters Kluwer Health/Lippincott Williams & Wilkins, 7th Edition

ISBN: 978-1-4511-8612-3

Year: 2014

Title: *Nutrition and diet therapy*

Author(s): C. Lutz, E. Mazur, N. Litch

Publisher: F. A. Davies Company, 6th Edition

ISBN: 978-0-8036-3718-4

Year: 2015

Title: *Nutrition for nurses*

Author(s): O. L. Oke, E. O. Ojofeitimi

Publisher: Longman Group Ltd, 1st edition,

Year: 1984

Title: *Nutrition and diet therapy*

Author: R. A. Roth

Publisher: Cengage Learning, 10th Edition

ISBN: 13: 978-14354-8629-4

Year: 2011

**Main Lecture:** below is a description of the course contents.

### **General Overview of Lecture**

Food is one of the basic requirements that man needs to survive. Nutrition is the study of what food is composed of and how the food we eat affects our body. The study of food is very important because when food is not taken properly it can cause us to fall ill. For example, excess intake of fatty foods and carbohydrates can lead to obesity. What this means is that food must be taken in the right quantity and quality to stay healthy; hence, the importance of the study of nutrition in nursing.

### **Historical Perspective of Nutrition**

From time immemorial different foods have been known to differ in properties from one another that it was deemed fit to prevent and/or treat certain ailment (Shils, Olson, Shike, & Ross, 1999). Although the consistent documentation of the scientific study of food can be said to have started in the 18th century, nutrition is as old as man. When God created man, He gave him dominion over all the animals and plants, “they will be yours for food,” says Genesis 1.29b (NIV). Even after the fall of man following his disobedience to God, he was not denied food. In fact, he was told “through painful toil you will eat food... and you will eat the plants of the fields.” Genesis 3: 17b and 18b. Therefore, food has sustained man from creation till this day. We will briefly look at some of the developmental milestones in the science of nutrition.

### **Developmental Milestones**

The first recorded nutritional experiment with humans can be found in the book of Daniel. During their captivity in Babylon, Daniel and his friends were chosen as court servants and were to be fed with the king’s fine foods and wine, but refused, preferring vegetables and water. After ten days of receiving vegetarian diets they were observed to be healthier than the rest of the men fed with the king’s food and wine.

In 2500 B.C, the first recorded dietary advice cautioned people with “pain inside” to avoid onion for at least three days.

In 400 B.C, Hippocrates, the "father of medicine," said to his students, "Let thy food be thy medicine and thy medicine be thy food." During this time, foods were often used as cosmetics or as medicines in the treatment of wounds.

In the 1500s, scientist and artist Leonardo da Vinci compared the process of metabolism in the body to the burning of a candle.

In 1747, Dr. James Lind, a physician in the British Navy, performed the first scientific experiment in nutrition. At that time, sailors were sent on long voyages for years and they developed scurvy (a painful, deadly, bleeding disorder). Only non-perishable foods such as dried meat and breads were taken on the voyages, as fresh foods would not last. In his experiment, Lind gave some of the sailors sea water, others vinegar, and the rest limes. Those given the limes were saved from scurvy. As Vitamin C was not discovered until the 1930s, Lind did not know it was the vital nutrient missing from the diet of those suffering from scurvy.

In 1773, Antoine Lavoisier, the father of nutrition and chemistry discovered the actual process by which food is metabolised. He also demonstrated where animal heat comes from. In his equation, he describes the combination of food and oxygen in the body, and the resulting giving off of heat and water.

In early 1800s, it was discovered that foods are composed primarily of four elements: carbon, nitrogen, hydrogen and oxygen, and methods were developed for determining the amounts of these elements.

In 1840, Justus Liebig a German and pioneer in early plant growth studies, was the first to point out the chemical makeup of carbohydrates, fats and proteins. Carbohydrates were made of sugars, fats were fatty acids, and proteins were made up of amino acids. Liebig was also the first person to discover how the level of proteins in food can be determined.

In 1897, Christiaan Eijkman, a Dutchman working with natives in Java, Indonesia observed that some of the locals developed a disease the locals referred to as Beriberi, which caused heart problems and paralysis. He observed that when chickens were fed the local diet of white rice, they developed the symptoms of Beriberi. When he fed the chickens unprocessed brown rice (with the outer bran intact), they did not develop the disease. Eijkman then fed brown rice to his patients and they were cured. He discovered that food could cure disease. Nutritionists later learned that the outer rice bran contains vitamin B<sub>1</sub>, also known as thiamine.

In 1912, E.V. McCollum, while working for the U.S. Department of Agriculture at the University of Wisconsin, developed an approach that opened the way to the widespread discovery of nutrients

using rats. He discovered the first fat soluble vitamin, Vitamin A. He found that rats fed butter were healthier than those fed lard, as butter contains more Vitamin A than lard.

In 1912, Dr. Casmir Funk was the first to coin the term “vitamins” as vital factors in the diet. He wrote about these unidentified substances present in food, which could prevent the diseases of scurvy, beriberi and pellagra (a disease caused by a deficiency of niacin, vitamin B<sub>3</sub>). The term vitamin is derived from the words vital and amine, because vitamins are required for life and they were originally thought to be amines - compounds derived from ammonia.

In the 1930s, William Rose discovered the essential amino acids, the building blocks of protein.

In the 1940s, the water-soluble B and C vitamins were identified. Also, during this period, Russell Marker perfected a method of synthesising the female hormone progesterone from a component of wild yams called diosgenin.

### **Is Nutrition Science or Art?**

Nutrition can be described as a science as well as an art. It is science because it can be proven in animals or human beings. For instance, it has been repeatedly proven over the years that nutritional deficiencies can cause illness in humans and animals.

Nutrition is also an art because the way the food is presented to the consumer may either be appealing or unappealing regardless of its nutritious values. The art of nutrition was first known before its science. Before the emergence of consistent scientific study of nutrition, emphasis has always been placed on how to make food available, prepare it, as well as, cultivate it. Food does not only nourish the body, but the mind and soul as well since it “is loaded with personal, social, and cultural meanings that define our food values, beliefs, and customs” (Dudek, 2014, p. 3).

### **Definition of Terms:**

**Nutrition:** is the study of the interaction of nutrients and other substances in food in relation to maintenance, growth, reproduction, health and disease of an organism.

**Nutrients:** these are substances that are essential to life which must be supplied by food. They have the ability to modify one or more bodily functions when ingested.

**Diet:** is what an organism eats. Diet is largely determined by the availability and palatability of food.

**Food:** is any nutritious substance that organisms (including man and plants) eat or drink in order to maintain life and growth.

**Metabolism:** the sum total of all the chemical reactions that go on in living cells; it involves anabolism and catabolism.

**Energy:** is the fuel we need from food to function and be active. Energy requirements vary depending on your age, body size and physical activity.

**Energy metabolism:** the reactions by which the body obtains and spends the energy from food.

**Calories:** are a measurement of energy. One calorie is equivalent to 4.18 kJ.

**Vegetarian:** a general term used to describe a person who excludes meat, poultry, fish or other animal-derived foods from his/her diets.

**Adequate diet:** a diet that contains all the essential nutrients taken in the right proportion at a sitting or is a diet that contains at least one food item from all the food groups.

**Food security:** the availability of food stuffs in enough quantity and quality to every member of a household regardless of age, sex, economy, religion, race and individual condition.

**Food insecurity:** the unavailability of food stuffs in both quantity and quality in a household at all times that may lead to growth retardation, poor development, micronutrient deficiencies and poor cognitive development and low productivity.

**Food safety:** this is a guarantee that such food when eaten will not cause harm to the consumer.

**Anthropometric:** relating to measurement of the physical characteristics of the body such as height and weight.

**Additives:** these are substances added to food to improve flavour, colour, and texture or to preserve foods to help extend the shelf life.

**Free radicals:** refer to atoms that have unpaired electrons in their outer layers. Caused by pollutants, cigarette smoke, and the by-product of metabolism; they are believed to contribute to tissue damage and aging.

**Antioxidants:** assist in protecting your body against the damage caused by free radicals by neutralising them.

### **Importance of Nutrition to Nursing**

The following are some of the reasons why the study of nutrition is important to nursing:

- 1) The knowledge of nutrition helps nurses identify patients at risk of nutritional deficiency during screening.
- 2) Nurses often serve as go-between the dietitian and physician when caring for patients with nutritional need.
- 3) Nurses can serve as nutrition resource to patients and family in resource poor settings or in-home care settings where dieticians are available only upon consultation.

- 4) Nurses may reinforce nutrition counselling provided by the dietitian and may be responsible for basic nutrition education in hospitalised clients with low to mild nutritional risk.
- 5) Nurses can use the knowledge of nutrition to promote the health of individuals, families, groups and the community at large.
- 6) Understanding the processes in nutritional science will help the nurse to understand the relationship between nutrition and health.
- 7) Understanding the nutritional processes will help the nurse make wise nutrition decisions for her patients.

## Conclusion

This introductory unit has been able to open up the discuss of this course, stating the intended purpose of this course, a brief historical perspective, definition of terms, the science and art of nutrition, and the importance to nursing science.

## References

- Best, C. (Ed.). (2008). *Nutrition: A handbook for nurses* (1st ed.). West Sussex: Wiley-Blackwell.
- Dudek, S. G. (2014). *Nutrition essentials for nursing practice* (7th ed.). Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Sabate, J., & Ratzin-Turner, R. (2001). *Vegetarian nutrition* (1st ed.). Boca Raton: CRC press.
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- Thompson, L. J., Manore, M. M., & Vaughan, A. L. (2011). *The science of nutrition* (2nd ed.). Boston: Pearson Benjamin Cummings.

