

Historical development of Human Nutrition (NTD 212)

Lecture-2

by

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Today more than ever, obtaining nutritional knowledge can make a big difference in our lives.

Air, soil, and water pollution in addition to modern farming techniques, have depleted our soils of vital minerals

The widespread use of food additives, chemicals, sugar and unhealthy fats in our diets contributes to many of the degenerative diseases of our day such as cancer, heart disease, arthritis and osteoporosis.

Here is a brief history of the science that offers the hope of improving our health naturally

Hippocrates

400 B.C. -- Hippocrates, the "Father of Medicine", said to his students, "Let thy food be thy medicine and thy medicine be thy food". He also said "A wise man should consider that health is the greatest of human blessings.

400 B.C. -- Foods were often used as cosmetics or as medicines in the treatment of wounds. In some of the early Far-Eastern biblical writings, there were references to food and health. One story describes the treatment of eye disease, now known to be due to a vitamin A deficiency, by squeezing the juice of liver onto the eye. Vitamin A is stored in large amounts in the liver

Leonardo da Vinci

1500's - Scientist and artist Leonardo da Vinci compared the process of metabolism in the body to the burning of a candle.

Dr. James Lind

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 nonperishable foods such as dried meat and breads were taken on the voyages, as fresh foods wouldn't 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 wasn't discovered until the 1930's, Lind didn't know it was the vital nutrient. As a note, British sailors became known as 'Limeys'.

Antoine Lavoisier

1770 -- Antoine Lavoisier, the “Father of Nutrition and Chemistry” discovered the actual process by which food is metabolized. 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.

Early 1800's - 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.

Justus Liebig

1840 -- Justus Liebig of Germany, a 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.

Christiana Eijkman

1897 - Christiana Eijkman, a Dutchman working with natives in Java, observed that some of the natives developed a disease called Beriberi, which caused heart problems and paralysis. He observed that when chickens were fed the native 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 B1, also known as thiamine.

E.V. McCollum

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. He decided to work with rats rather than large farm animals like cows and sheep. Using this procedure, 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 Vitamins A.

Dr. Casmir Funk

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-3). 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.

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

1940's - The water soluble B and C vitamins were identified.

1940's - Russell Marker perfected a method of synthesizing the female hormone progesterone from a component of wild yams called diosgenin.

1950's to the Present -- The roles of essential nutrients as part of bodily processes has been brought to light. For example, more became known about the role of vitamins and minerals as components of enzymes and hormones that work within the body.

Linus Pauling

1968-- Linus Pauling, a Nobel Prize winner in chemistry, created the term Orthomolecular Nutrition. Orthomolecular is, literally, "pertaining to the right molecule". Pauling proposed that by giving the body the right molecules in the right concentration (optimum nutrition), nutrients could be used by people to achieve better health and prolong life. Studies in the 1970's and 1980's conducted by Pauling and colleagues suggested that very large doses of vitamin C given intravenously could be helpful in increasing the survival time and improving the quality of life of terminal cancer patients.

Philosophy and Objective of Human Nutrition and Dietetics

Philosophy

- Human Nutrition as a science deals with the foods which the human organism requires, how he utilizes them and how he deals with the waste products due to its activities.
- Dietetics, on the other hand, is the application of scientific principles of nutrition to human subjects in health and disease conditions.
- Student of Nutrition and Dietetics is thus engaged in a broad multidisciplinary study bridging the gap between the areas of food science, applied medical science and management studies.

- **Objectives**

The objectives of the programme are to ensure that students:

1. Understand the inter-relationship among agriculture, food and nutrition as well as how they relate to health
2. Understand the nutritional values of locally available foods and appreciate the function of the different constituents, nutrients, their interaction and possible toxic effects of non-nutrient constituents.
3. Can assess the main nutritional problems in a community; appreciate the causes and severity of malnutrition in a community and design intervention for their solution.

- 4. Plan and formulate adequate diets in health and diseases for all the groups and population types.
- 5. Appreciate the effects of processing methods on the nutritive value of food and apply these techniques to improve the quality of local food resources in order to meet nutritional needs of the individuals, community and population at large.
- 6. Plan, implement, monitor and evaluate nutrition programmes and
- 7. Have a global view of the problems of malnutrition and agencies involved in solving the problem, especially in Africa.

- **Scope**

The programme commences with a study of the relevant branches of the natural and management sciences, which form the basis of a coordinated sequence of applied course offered in the penultimate and final years.

An essential aspect of this course is the opportunity provided for students to gain direct practical experience during periods of industrial training (IT) in the food industries, hotels, hospitals, research centers, corporate organizations and agencies.