Natalie Mueller
NUTR-1020-519-521-Sp21

Learning Outcomes

1. **Demonstrate knowledge of human nutritional needs and the role of nutrition in improving individual health and the societal economic impact of food choices.**

   Nutrition is very closely tied to individual health. There are numerous diseases that people can suffer from due to not getting enough nutrients or eating too many unhealthy foods. For example, a person who is deficient in vitamin C will eventually develop scurvy with symptoms like bleeding gums, bruising and scaly skin, and even tooth loss. A person who eats too much saturated fat will have high levels of LDL (the “bad” cholesterol) in the bloodstream and will be at risk for developing heart disease.

2. **Relate technological advancements in medicine and food production to the advancement of the science of human nutrition.**

   Technology and research have made sweeping advancements in both food production and the study of human nutrition. For example, after finding that certain populations are at risk of nutrient deficiencies, we have been able to manufacture fortified foods such as milk with added vitamin D or rice with added vitamin A, iron, folic acid, and other nutrients. We also have been able to synthesize certain nutrients for supplements, which studies show for the most part are just as potent and absorbed just as well as naturally occurring vitamins and minerals.

3. **Explain the impact that the food industry has on human food choices and the subsequent relationship to health and disease at the individual, societal, and environmental level.**

   The food industry has had a profound effect on our food choices and, consequently, our health. The industry pushes unhealthy food like snacks and candy because they are very cheap to produce and the combination of sugars, fats, and salts have a high potential for addiction in consumers, making them purchase more and more of these items. This has slowly led to the obesity epidemic much of our world is facing, and in addition to poor health, people are contracting many diseases that are expensive for our health care system to treat.

4. **Provide examples of past and present nutrient and diet trends in modern society and the positive and/or negative implications on human health and the earth’s resources.**

   Diet trends are ever-evolving based on a variety of factors from medical advancements to social media trends that have no scientific support. In the past, low-fat diets were heavily pushed which started a cascading problem of food manufacturers adding salt and sugar to make up for the flavor lost when removing fat. Currently there’s a popular

diet called keto where people will eat so few carbohydrates that their body goes into a metabolic state called ketosis which is where the body will use fat for energy instead of glucose. While the keto diet can be used to lose weight, ketosis can be a dangerous process for people who have type 1 diabetes or suppressed pancreatic function. Many people will start fad diets like this without consulting a doctor to make sure they won't hurt their bodies. Trendy diet foods can also have a negative impact on the environment: Quinoa has become popular for its nutritional value, but due to increasing demand and price, the very people who grow this crop can no longer afford to eat it.

5. **Provide examples of positive and negative interactions of humankind with microorganisms regarding sickness, health and food production.**

   Our bodies have many different types of relationships with microorganisms, both positive and negative. For example, probiotics are beneficial microorganisms that colonize in our digestive tract and help protect us from harmful bacteria. Bacteria in our gut can even synthesize necessary nutrients like folate and vitamin K. On the other hand, we can also get sick from other types of microorganisms. Botulism is an illness caused by consuming toxins produced by bacteria that largely occurs due to improperly canned or bottled products.

6. **Address diet and nutrient issues and concerns for weight control, disease prevention, physical activity, food availability, and biotechnology.**

   When it comes to proper nutrition, food availability plays a large part in weight control and disease prevention. In many developing countries, biotechnology such as breeding hardy or pest-resistant crops or enriching plants with vitamins goes a long way towards helping protect a population against undernutrition. Deficiencies such as vitamin A, zinc, iron, and iodine are especially prevalent in developing countries and deserve a special focus. Likewise, populations in developed countries need to have access to a variety of healthful foods to help promote physical health and support physical activity. These populations are less at risk for health conditions due to undernutrition or malnutrition, but need a special focus on not eating calorie-dense or overly processed foods.