

- **CHEM120OX-18017 Week 7 GROUP PROJECT**

How vitamins and minerals/trace elements affect health/human body (CO 3)

Title: The Essential Role of Vitamins and Minerals in Human Health/ body and Their Impact on Nursing and Healthcare.

Abstract

Vitamins and minerals are organic and inorganic substances, respectively, that are essential for various metabolic functions and processes in the human body. They act as coenzymes, antioxidants, structural components, and regulators of various physiological processes, such as bone formation, wound healing, immune system activation, energy conversion, and cellular maintenance. However, these nutrients, also known as micronutrients, are not produced in our bodies and must be derived from the food we eat. The recommended dietary intake of vitamins and minerals varies depending on age, gender, and life stage. Vitamins and minerals are indispensable for maintaining health and wellbeing, as they influence various aspects of physical, mental, and emotional health.

Vitamins are organic molecules that are essential for various metabolic functions and processes in the body. They are classified into two groups based on their solubility, which affects their absorption, transport, storage, and excretion. Fat-soluble vitamins, namely Vitamins A, D, E, and K, are soluble in fat and can be stored in the liver and fatty tissues of the body. They are absorbed along with dietary fat and require bile for their digestion. Water-soluble vitamins, such as Vitamin C and the B-complex vitamins, are soluble in water and cannot be stored in the body. They are absorbed directly into the bloodstream and require no special carriers or enzymes for their digestion. Any excess number of water-soluble vitamins is eliminated through urine, preventing accumulation.

Minerals are inorganic elements that originate from the earth's crust and water sources. They are essential nutrients that have various roles in the body, such as supporting the structure of bones and teeth, regulating fluid balance and nerve impulses, and participating in enzyme reactions. Minerals cannot be synthesized by the body and must be obtained from the food we eat. Plants absorb minerals from the soil and water, and animals obtain minerals by consuming plants or other animals. Minerals can be classified into two groups based on the amount that the body needs: macro-minerals and trace minerals. Macro-minerals, such as calcium, magnesium, sodium, and potassium, are required in larger amounts (>100 mg/day) and have major functions in maintaining the body's homeostasis. Trace minerals, such as iron, zinc, copper, and iodine, are