# Lecture Notes - Healthy Diet

**Definition of healthy diet:**

A habit of eating the right amounts of nutrients on a proper schedule to achieve the best performance and longest possible lifetime in good health. Nutrition can be used to maximize health, happiness, and well-being.

**Impact of having a healthy diet:**

- Reduce risk of developing diseases and disorders like cancer, diabetes, heart disease, and iron deficiency anemia.
- Gain muscle mass.
- Improve tissue quality (skin, hair, and teeth) to be in good conditions.
- Maintain joint health, especially among elderlies.
- Support growth and development to reach full potential among adolescents.
- Optimize cognitive function (focus, concentrate, and quick decision making).
- Improve exercise capacity, energy, and endurance.
- Reduce risk of injury.
- Improve sleep quality.

**Poor Diet vs. Healthy Diet**

| Poor Diet | Healthy Diet |
|---|---|
| Low-nutrient food | Nutrient-rich foods |
| Large/ tiny portion sizes | Appropriate portion sizes |
| Irregular eating times | Regular eating times |

**Proper Eating Schedule**

Most eating schedules are generally healthy as long as it is performed in a consistent routine and contains enough nutrients.

- Eat every two to three hours

  Breakfast- snack- lunch- snack- dinner

- Three square meals

  Breakfast- lunch- dinner

- Skipped meals (or intentional fasting)

  Lunch- snack- dinner

  This eating habit is not recommended for those who are pregnant or in growth periods.

**Nutrients**

a. Carbohydrates

   Carbohydrate is the main source of fuel for the body and brain. This nutrient is easily available in Dang's common diets. The food sources are rice, wheat flour, potatoes, lentils, and chickpeas.

b. Fat

   Fat could be turned into energy fuel when there is not enough carbohydrate. It supports joint health and enables the body to absorb certain vitamins. Fat is also commonly available in Dang's diet, which comes from nuts, seeds, eggs, and oil.

c. Protein

   Proteins are essential nutrients for the human body because they are one of the building blocks of body tissue and can also serve as a source of energy. Proteins repair broken cells in the body and help growth, especially in adolescent years. When broken down into amino acids, they become essential to cell repairment which is essential for life. Additionally, protein is needed to form blood cells.

   Protein occurs in a wide range of food from animal products to legumes, nuts, and seeds: soybeans, lentils, chickpeas, corn, wheat, mung beans, and many others.

d. Vitamins and minerals

Vitamin and minerals are supporting agents for vital functions in the body. Each of them has specific roles to keep us alive. In this lecture notes, some vitamins and minerals that are mentioned are iron, folate, vitamin C, and calcium.

e. Iron

Dietary iron makes hemoglobin that can be found in red blood cells. It carries oxygen to different parts of the body including the brain and internal organs. There are two types of iron: heme and nonheme iron.

Both heme and non-heme irons can be found in animal products, such as red meat, poultry, fish, and other seafood. Non-heme iron comes exclusively from eggs or plants. Human body gets its iron mostly from heme sources because it is easier to be absorbed. For the body to absorb non-heme, vitamin C is needed to enhance the process.

f. Folate

Folate, also known as vitamin $B_9$ is needed to help red blood cell production and metabolize amino acids required for growth. Folic acid is a manufactured form of folate which can be found in dietary supplements (e.g. iron and folic acid supplementation). As folate has a role in cell division and growth, it is highly important during infancy and pregnancy.

Some plant sources high in folate are peanuts, sunflower seeds, lentils, chickpeas, spinach, lettuce, soybeans, and others.

g. Vitamin C

Vitamin C increases the immune system of the body and can enhance iron absorption process, so it is important to consume vitamin C at the same time or near the time of iron consumption. Cooking processes that involve high temperature or long cooking time can reduce the vitamin C content significantly. Another cause of vitamin C loss from food is leaching, which transfers vitamin C to the cooking water which is decanted or not consumed.

Most fruits and vegetables have a relatively high content of vitamin C.

h. Calcium

Calcium is important for bone growth and strength, but it can inhibit the absorption process of iron to the body. So, it is important to consume calcium at least an hour before or after the main meals that are high in iron.

Foods rich in calcium include dairy products, such as yogurt, cheese, and milk.

i. Other substances found in tea, coffee, and cocoa (caffeine and polyphenols) also inhibit the absorption of iron. Consumption of them at least one hour before or after the main meals is recommended.

**Daily Nutrition Requirement**

| Nutrient | Function | Daily Requirement |
|---|---|---|
| Iron | Make hemoglobin to carry oxygen | 8-11 mg |
| Protein | Repair broken cell, building blocks | 46-56 g |
| Folate | Help red blood cell production | 0.4 mg = 400 mcg |
| Vitamin C | Increase immune system, help iron absorption | 65-90 mg |
| Calcium | Build strong bones, inhibit iron absorption | 1000-1300 mg |

**Nutrition Content of Some Crops**

| Food (per 100 g) | Iron | Protein | Folate | Vitamin C | Calcium |
|---|---|---|---|---|---|
| White rice | 0.2 mg | 2.7 g | 1 mcg | 0 | 10 mg |
| Finger millet | 12.6 mg | 7.6 g | - | - | - |
| Chickpea | 2.67 mg | 8.14 g | 158 mcg | 1.2 mg | 45 mg |
| Soybean | 1.11 mg | 7.17 g | 44 mcg | 0.2 mg | 111 mg |
| Corn | 2.71 mg | 9.42 g | 19 mcg | 0 | 7 mg |
| Lentil | 3.11 mg | 8.4 g | 169 mcg | 1.4 mg | 18 mg |
| Wheat flour | 1.17 mg | 10.33 g | 26 mcg | 0 | 15 mg |
| Tomato | 0.27 mg | 0.88 g | 15 mcg | 13.7 mg | 10 mg |