

UNIT IV - FOOD SELECTION AND CONSUMER HEALTH

Lesson 4: Relationship Between Diet and Health

Objective

The student will be able to describe the relationship between diet and health.

I. Study Questions

- A. How does cholesterol affect human health?
- B. Why is the composition of fat in food important?
- C. What is the relationship between dietary fiber and health?
- D. What are major health issues affected by nutrition?
- E. How can health problems be minimized through proper nutrition?

II. Reference

Martin, Phillip R. *Food Science and Technology* (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1994. Unit IV.

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TEACHING PROCEDURES

A. Review

Review the value of beverages to a person's diet. Concentrate on milk. You may want to briefly discuss the fact that calcium is a necessary mineral which is readily available in dairy products. Research indicates that calcium uptake from a person's diet is significantly reduced around age 30-35.

B. Motivation

1. Fry potatoes with saturated (coconut, palm, lard), monounsaturated (canola, olive, peanut), and polyunsaturated (sunflower, safflower, corn, soybean, sesame) fats. Do a taste test. Question students about different fat types to determine how much they know about fat.
2. Have students keep a weekly diet journal. At the end of the week, discuss whether their diets were balanced.

C. Assignment

D. Supervised study

E. Discussion

1. Discuss how cholesterol affects human health.

How does cholesterol affect human health?

- a. Necessary for building membranes, manufacture of hormones and vitamin D, and other body functions. The liver produces cholesterol when diet intake is insufficient.
 - b. High total blood cholesterol level is a major risk factor in the development of coronary heart disease
 - c. Low-Density Lipoprotein is called bad cholesterol
 - d. High-Density Lipoprotein is called good cholesterol
2. Discuss why the composition of fat is important.

Why is the composition of fat in food important?

- a. Fats add flavor, aroma, texture, and satisfaction (satiety) to a meal
 - b. High energy source - 9 calories/gram
 - c. Transport and absorb fat-soluble vitamins A, D, E, and K
 - d. Composed of fatty acids - a fat may contain two or more types of fatty acids. Classification is based on the predominant type of acid structure.
 1. Saturated fatty acids
 - a. Come from animal sources and coconut, palm, palm kernel, and vegetable oils
 - b. Should compose 1/3 or less of total fat intake
 - c. Can raise blood cholesterol
 2. Monounsaturated fatty acids
 - a. Found in animal and plant fats especially olive, canola, and peanut oils
 - b. Should compose 1/3 or less of total fat intake
 - c. May help lower blood cholesterol
 3. Polyunsaturated fatty acids
 - a. Come from sunflower, safflower, corn, sesame, and soybean oils
 - b. Can help lower blood cholesterol
 - c. Linoleic acid is an essential fatty acid needed for normal growth
 - e. Should contribute no more than 30 percent of caloric intake
 - f. Triglycerides - edible oils and fats composed of three fatty acids attached to glycerol
3. Discuss the relationship between dietary fiber and health.

What is the relationship between dietary fiber and health?

- a. Fiber provides bulk and roughage which contribute to a healthy intestine.
 - b. Fiber holds water, loosens stool, and decreases transit time through colon.
 - c. It can lower serum cholesterol, decrease incidence of colon cancer, and lower the insulin requirements of diabetics.
 - d. Excessive fiber can bind minerals making them unavailable for absorption.
4. Discuss the major health issues affected by nutrition.

What are major health issues affected by nutrition?

- a. Starvation
- b. Obesity

- c. Heart disease
 - d. Bulimia and anorexia
 - e. Cancer
 - f. Malnourishment - osteoporosis, night blindness, dermatitis, beri-beri, neuritis, photophobia, anemia, pellagra, scurvy, rickets, hemophilia
 - g. Diverticulitis
 - h. Ulcers
 - i. Decreased recovery time after illness or surgery
5. Discuss how health problems can be minimized through proper nutrition.

How can health problems be minimized through proper nutrition?

- a. Balanced diet plus exercise
 - b. Meet RDA's
 - c. Remain in weight range/caloric intake
 - d. Diet modification if necessary
- F. Other activities
- 1. Have a Red Cross employee or school nurse speak about or demonstrate a blood iron and cholesterol test.
 - 2. Invite a dietician to speak about his/her job.
 - 3. Each student should monitor food intake for one day and determine if daily values were met, at what level, and what the caloric intake was.
 - 4. Assign students to examine the type of cooking oil(s) used at school, their home, and a local cafe or restaurant. Determine if oils are saturated, monounsaturated, or polyunsaturated fats.

G. Conclusion

This lesson should remind students that their health is directly related to their diet. Issues such as cholesterol, fat, fiber, and dietary diseases are very prevalent. A closer examination of one's diet is always a desirable action.

H. Competency

Describe the relationship between diet and health.

Related Missouri Core Competencies and Key Skills: None

I. Answers to Evaluation

1. natural
2. necessary
3. different than
4. LDL
5. increase
6. c
7. b
8. a
9. age, heredity, gender
10. Retains water, loosens stool, and decreases transit time through colon.
Possibly lowers serum cholesterol, decreases colon cancer, and lowers
diabetic insulin requirements.
11. Three of the following: starvation, obesity, heart disease, bulimia and
anorexia, cancer, malnourishment
12. Three of the following: balanced diet, follow RDA's, exercise, appropriate
caloric intake, proper diet modification

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EVALUATION

Circle the word in parentheses to complete the sentence correctly.

1. Cholesterol is a (synthetic, natural) compound.
2. Cholesterol is a (necessary, unnecessary) component of cell membranes, and hormone and bile production.
3. Blood cholesterol is (identical to, different than) dietary cholesterol.
4. (High-Density Lipoprotein, Low-Density Lipoprotein) is referred to as "bad" cholesterol.
5. Diets high in total and saturated fats tend to (increase, decrease) cholesterol levels.

Match the types of oil with their appropriate molecular structure description.

- | | |
|--------------------------------------|--------------------|
| ____6.Palm and coconut oils | a. Polyunsaturated |
| ____7.Olive, peanut, and canola oils | b. Monounsaturated |
| ____8.Soybean and sunflower oils | c. Saturated |

Complete the following short answer questions.

9. Name two factors, other than diet, that affect a person's cholesterol level.

10. How can dietary fiber aid nutrition?

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11. List three diseases/ disorders caused by poor nutrition.

12. What are three keys to minimizing health problems?