

PASSAGE II

Coronary heart disease affects millions of people worldwide each year. It is the end result of a build up of plaque (cholesterol) on the interior walls of the arteries that supply the muscle of the heart. Most individuals with coronary heart disease show no evidence of disease for decades as the disease progresses before the first onset of symptoms, often a “sudden” heart attack. After decades of building up on the artery walls, the plaque may reduce the blood flow to the heart muscle. There are several hypotheses that have been proposed to explain the causes of plaque build-up leading to coronary heart disease.

Behavioral Hypothesis

The primary causes of coronary heart disease are behavioral factors such as diet, risky behaviors, and level of physical activity. Coronary heart disease is associated with smoking, obesity, *hypertension* (chronic high blood pressure) and a lack of vitamin C. According to one study, individuals who consume large amounts of saturated fats and trans-fats have high levels of cholesterol and are at higher levels of risk for heart disease. Vegetarians have been shown to have a 24% reduced risk of heart disease due to dietary modifications alone. In addition, extra weight is thought to lead to higher total cholesterol levels, high blood pressure, and an increased risk of coronary heart disease. Obesity increases the chances of developing other risk factors for heart disease, especially high blood pressure, high blood cholesterol, and diabetes. Smoking is also a major cause of heart disease as it puts individuals at higher risk of developing a number of chronic disorders. Furthermore, people who are not physically active have a greater risk of heart attack than do people who exercise regularly. Exercise burns calories, helps to control cholesterol levels and diabetes, and may lower blood pressure. Exercise also strengthens the heart muscle and makes the arteries more flexible.

Familial Hypothesis

Coronary heart disease is genetically inherited, meaning it tends to run in families. For example, people whose parents or siblings had a heart or circulatory problem before the age of 55 are at greater risk for heart disease than someone who does not have that family history. Risk factors (including hypertension, diabetes, and obesity) may also be passed from one generation to another. Studies have determined that the single greatest indicator of risk for coronary heart disease is family history. Other studies have shown isolated populations to be significantly more or less susceptible to coronary heart disease than is the general population. Isolated populations share the same *gene pool* (a set of genetic traits found within a population), which supports the proposition that family history is the primary cause and indicator of the disease.

6. To accept the evidence presented in the Familial Hypothesis, one must assume that all members of a population sharing the same gene pool have:

- F. a varied family history.
- G. a common family history.
- H. a history of high risk for heart disease.
- J. a history of low risk for heart disease.

7. One advantage of the Behavioral Hypothesis is that it best explains why heart disease is more common in which of the following groups?

- A. Isolated populations.
- B. Smokers.
- C. Individuals with a family history of heart disease.
- D. Vegetarians.

8. According to the Familial Hypothesis, individuals whose parents or siblings had a heart or circulatory problem before the age of 55 are:

- F. members of an isolated population.
- G. at a lower risk for heart disease than someone who does not have that family history.
- H. at a higher risk for heart disease than someone who does not have that family history.
- J. at the same risk for heart disease as someone who does not have that family history.

9. Which of the following is a criticism that supporters of the Behavioral Hypothesis would make of the Familial Hypothesis?

- A. Behaviors and dietary norms are passed down between generations.
- B. Obesity is not related to being at risk for heart disease.
- C. Exercise is not related to being at risk for heart disease.
- D. Family history is the single greatest indicator of risk for heart disease.

10. How would supporters of the Behavioral Hypothesis explain the studies cited in the Familial Hypothesis regarding isolated populations?

- F. A common gene pool does not indicate familial ties.
- G. All members in an isolated population are at a high level of risk for heart disease.
- H. Members within isolated populations rarely behave in a similar manner.
- J. Members within isolated populations often behave in a similar manner.

11. Assume that increased cholesterol levels result in increased risk for coronary heart disease. How would supporters of the Familial Hypothesis explain the study cited in the Behavioral hypothesis?

- A. Family history is a major factor in developing hypertension.
- B. A common gene pool determines heart disease risk level.
- C. Behaviors and dietary norms are passed down from family members.
- D. Family history is a major factor in determining cholesterol levels.

12. The Behavior Hypothesis and the Familial Hypothesis are similar in that they both:

- F. name family history as the greatest factor of risk for heart disease.
- G. name diet as the greatest factor of risk for heart disease.
- H. cite hypertension, cholesterol, and obesity as major risk indicators.
- J. promote a vegetarian diet.

