

PUB 101 – Dr. Amato

Spring 2021

Writing Assignment #5

Due Monday 3/22/2021 by 11:59 pm EST

Instructions: Be sure to answer all parts of each question and respond in your own words. Your response should not be mostly quoting from other sources. Please provide a reference or works cited page for any references or citations you use throughout this written assignment. Expected word counts are provided for each question.

Question: There are both biological and genetic factors and can affect a population's health. One of the leading causes of morbidity and mortality in the United States is cardiovascular disease. Cardiovascular disease consists of high blood pressure, high cholesterol, stroke, heart attacks, and congestive heart failure. Please note, the following prompts are asking about biological and genetic factors, *not* behavioral factors.

1. Describe how biological factors (e.g., we talked about these in the chronic disease lecture and your text talked about it in Chapter 11) influence the risk of cardiovascular disease. (Length: approximately 150 words)

Cardiovascular diseases can be caused by multiple biological factors including high blood pressure and high total cholesterol level that is controlled by smoking, exercising, and use of statins. In order to be healthy and not get a cardiovascular disease, High HDL and low LDL should be maintained. This can be done by exercising, which increases HDL and lowers total cholesterol level. Also, use of statin can raise HDL and lower LDL. Thus, it is often used as a secondary prevention. However, if the person has high LDL and low HDL, he/she is bound to getting heart diseases. For example, smoking can lower HDL level, which increases possibility of getting heart diseases. In addition, high blood pressure can be a sign of getting cardiovascular diseases. Thus, secondary prevention can be used to control blood pressure level in order to prevent chances of getting heart diseases.

2. Describe how genetic factors (e.g., we talked about these in the chronic disease and genetic disease lectures, and your text talked about it in Chapters 11 and 12) influence the risk of cardiovascular disease. (Length: approximately 150 words)

Genetic factors also play a key role in determining possibility of getting chronic diseases like cardiovascular diseases. There are many complicated interactions between genes and environment that can lead to higher risk of getting cardiovascular diseases. For instance, genes encoded for cholesterol and other blood lipids are inherited from the parents to the offspring. If the parents have had cardiovascular diseases or been exposed to risks of getting them in their life time, it is likely that the offspring would also get heart diseases in the future. In addition, if the offspring does activities such as smoking and drinking too much with such family background, chances of getting cardiovascular diseases will be amplified. Same thing applies with blood pressure level, which is associated with risks of getting heart diseases. If the parents have high blood pressure, it is likely that the offspring would have high blood pressure, which eventually increases risks of getting heart diseases.

3. Think about how public health is aimed at the **population**, not the individual. Remember in Week 1 and Chapter 1 we defined how public health and medicine differ.
 - a. Explain how these biological and genetic factors influence health at a population level, rather than the individual risk factors. *(length: approximately 100 words)*

Biological and genetic factors are what contribute to leading causes of deaths and influence health of the population. These can be increased based on how public health deals with these factors so that a greater number of citizens can be healthier and death rates can decrease. In order to promote health at a population level, the government can focus on how the citizens can be aware of the diseases and how they can avoid from getting the diseases. For instance, legislations and governmental programs can be provided to promote health at a population level.

- b. Describe three ways the public health approach to preventing cardiovascular disease differs than the medical approach. *(Length: approximately 250 words. Hint - think about how the text revisited the terms primary, secondary, tertiary prevention in Chapter 11 and we talked about the public health field's role in thinking this way in lecture.)*

Since public health is aimed at the population, it can take actions in three types of preventions in order to reduce risks and impact of cardiovascular diseases. First prevention, also known as primary prevention, can be done by educating citizens about importance of keeping their heart healthy and seriousness of smoking/drinking. Advertisements and educational programs will strengthen awareness of the citizens about heart diseases and their risk factors. Then, they will be able to avoid activities that will cause heart disease. For example, smokers and heavy drinkers can be educated by health instructors about how much heart diseases are related with drinking and smoking to quit them for their heart conditions. As for secondary prevention, new born screening can be done. Genetic factors are important in terms of deciding one's getting cardiovascular diseases. If screening can be done to babies whose parents who have had heart diseases or been exposed to risks, they will be aware of risks of heart diseases and will try to avoid environmental factors. Also, they would be able to hold on to medications such as statin and take them in emergent situations to decrease death rates in the country. For tertiary prevention, cardiac rehabilitation programs can be run by governments to reduce the impact of ongoing cardiovascular diseases that have lasting effects. If the heart diseases are under the control of healthcare providers via daily check-ups and aids from the government, these diseases would be less terminal and lower death rates.

Citation

Amato, Katharine. "Social & Behavioral Determinants of Health". PUB101: Introduction to Public Health. University at Buffalo, Buffalo. March 2021. Lecture Recording.