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INTRODUCTION TO PHYSIOLOGY 1

BMHP5003

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Physiology of Cardiovascular D

Main Causes and Risk Factors

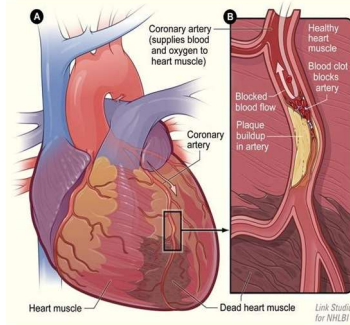
- **Life style**
 - inappropriate nutritional habits
 - physical inactivity
 - smoking
 - Excessive alcohol consumption
- **Ethnic background**

Assessment

- **General History taking**
- **Lifestyle questionnaire**
- **Physical examination**
 - Weight & height (BMI)
 - Vital signs
 - Blood test

Definition

Cardiovascular disease (CVD) is the disorder of the heart and blood vessels largely caused by the process of atherosclerosis



- **Intervention**
- **Medical treatment**
- **Advise and encouragement for the patient to make informed lifestyle changes**
 - **Stop smoking**
 - **Increase physical**

Types of Cardiovascular Diseases

- Coronary heart disease
- Angina
- Stroke
- Peripheral arterial diseases

Case Study

- A female Patient A born on 01/01 1976
- Age 45
- Weight 82 Kgs Height 160 cm
- Smokers 40-60 cigarettes a day
- Consume 4-6 units of alcohol per day
- Physically inactive

Conclusion

Cardiovascular disease is the main cause of death and disability in the UK. This is because of lack of exercise, unhealthy lifestyle, and lack of public health efforts and poverty and inequality. A quarter of the world death recorded in world health organization (WHO 2018) come from low-income countries and mainly caused by poverty and lack of public health awareness. In the UK the NHS puts a lot of effort in tackling the causes

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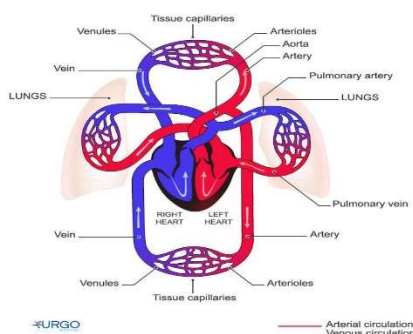
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The cardiovascular System

This poster is about the cardiovascular system (CVS) and main major health problems focusing on health factors causes of the disease. The poster also deals with a case study, the interventions required to address the health issues and concludes with the recommendation

The heart and the blood vessels (arteries, veins and capillaries form the cardiovascular system which is mainly responsible for the circulation of blood in the body. The system is responsible for transporting of deoxygenated blood to the lungs & then oxygenated blood around the body. It is the central organ of the cardiovascular system. An organ system that allows blood to flow, circulate and transport nutrients (such as amino acids and electrolytes) and supports the homeostasis of the body.

The cardiovascular system is divided into the venous branch-which consists of veins & venules which transport deoxygenated blood back from the body's organs, tissues & cells to the right side of the heart (via the vena cava into the right atrium & then into the right ventricle) - which in turn pumps this deoxygenated blood to the lungs (via the pulmonary artery) – where this blood is then oxygenated. The pulmonary vein then transports this newly oxygenated blood back to the left side of the heart- directly into the left atrium & then down into the left ventricle. The left ventricle then pumps this oxygenated blood (also having essential nutrients) to the body via the Aorta & then into the arterial branch of the cardiovascular system-which consists of arteries & arterioles; the vessels that transport oxygenated, nutrient rich blood to the organs, tissues & cells of the body.



The heart is subject various pathological states that give rise to heart disease & heart failure collectively known as cardiovascular disease (CVD). CVD includes all illnesses related to diseases of the heart and circulatory vessels such as coronary heart disease (angina and heart attack), stroke peripheral arterial diseases such as claudication (Ford, 2018)

Coronary heart disease (CHD) begins when coronary arteries (the arteries that supply the heart muscle with blood and oxygen) become narrowed by a gradual built-up fatty material (atheroma) within their walls which is known as atherosclerosis. The condition can cause heart attack or angina. The narrowing of the arteries with fatty deposits deprived the heart muscles from getting sufficient oxygen and rich nutrients to function properly. As the result the cells start to dye, and the proper function of the heart is disrupted. Patients suffer from the condition feel chest pain that radiates towards the arms, neck, jaw, back or stomach. Coronary Heart Disease (CHD) is more prevalent in women with an estimated 700,000 UK sufferers. Freezing weather and emotional upset can trigger this sickness. Symptoms are not the same for everyone it depends on the reactions of each individual body.

A heart attack (myocardial infarction-MI) can occur when atheromatous (fatty) material builds up within a coronary artery – blocking the blood flow through the artery. This becomes more acute when an unstable part of the atheromatous material breaks off & occludes the vessel leading to an acute event whereby obstruction prevents blood from flowing to the cardiac muscle (& ultimately other organs such as the brain).Due to the impaired blood flow through the artery, a blood clot can form, preventing the supply of blood and oxygen to the heart muscle-this can cause permanent damage to the heart muscle - this is known as myocardial infarction (heart attack).If a blood clot travels to the arteries leading to the brain this can lead to a cerebrovascular accident(CVA) or stroke(which can also occur when a weakened blood vessel bursts-haemorrhage).

A Stroke happens when the blood supply to part of the brain is cut off by a blood clot that blocks an artery carrying blood to the brain. A stroke may affect the way your body or mind functions due to the fact that brain cells can be damaged or destroyed. Researchers in the UK have found that women are at higher risk of stroke than men. They are also the most seriously affected by stroke and in need of long-term care. It is crucial to recognise the signs of a stroke and if you suspect someone having a stroke act **FAST**. (BMJ, 2020)

CVD has a number of symptoms. These include fatigue, irregular heartbeat, chest pain and fainting, rheumatic heart symptoms (Rheumatic fever), fever, pain, swelling of the joints, nausea, stomach cramps and vomiting. The condition can be caused by hypertension, diabetes, hypercholesterolemia, and obesity. There are many risk factors which can lead to

CVD. These include, smoking, obesity, diabetes (type 1 and 2), family History, age, ethnic background etc. (NICE, 2014; Rygiel, 2018)

To highlight the causes and risk factors the poster presentation included a case study of a patient named A who was born on 1st of January 1976 (45 years old) works every day in the city with a busy lifestyle. She smokes 40-60 cigarette sticks per day. She shows moderate high blood pressure (140/90) weighs 82kg, and her height is 160 cm with BMI of 32 The Patient has poor eating habits mostly depends on fast foods, fizzy drinks and high sugar diets; barely exercises and consumes 5 to 6 unit of alcohol every night. Patient A's lifestyle makes her prone to CVD (Merai *et al.*, no date).

The poster entertains the importance of a proper assessment and diagnosis of CVD to identify the root causes to develop a strategic plan to tackle the problem and provide better treatment and prevention measure to patients. As it is clearly put on the poster assessment of the condition must start from personal and social history of the patient. History taking is a very important step towards identifying the lead causes that lead to the condition of the patient. During history taking main risk factors, such as lifestyle, ethnicity, age and genetic pre-disposition of the patient can be pinpointed and can provide a framework to address the problem at the root. (Jill C. Muhrer, 2014)

The poster also tried to emphasise the importance of step-by-step diagnosis, including physical assessment, heart tracing, X-ray and imaging of patients to clearly identify the problem and direct all medical interventions the main problem to minimise patient distress, to save time and cost (Young K, 2009; Durga, 2015).

Conclusion

Cardiovascular disease is a major problem in the UK and around the world. The fast-changing lifestyle- busy life and easy access to fast foods and the dependency on fast foods, use of alcohol and smoking and largely sedentary life and lack of exercise all contributes to ever increasing problem of cardiovascular disease. The problem is a major challenge to society's wellbeing and requires a concerted effort to tackle the problem and its causes. Public health promotion, better health education and government interventions to enhance lifestyle changes among the population, such as building infrastructures to encourage exercise, limiting the advertisement fast unhealthy food and beverages, early identification and intervention vulnerable individuals through better health care systems is important. After all individual

members of the society need to take responsibility for their own health and make lifestyle changes to manage their own health and the health of their children and loved ones.

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