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CORONARY ARTERY DISEASE

Module: BMHP5003

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Executive Summary

In this particular project the overall situation of UK in respect to the coronary artery disease has been discussed in detail. The health condition of patients with this disease has also been mentioned and impact of changes in lifestyle and routine has been displayed here. Finally, the measurements taken by the **UK** government has been discussed and its impact in social care has also been highlighted in this study.

Table of Contents

Introduction	4
Anatomy and physiology of the health condition	4
Anatomical changes due to coronary artery disease	4
Physiological changes due to coronary artery disease	5
Body functioning of individuals with this health condition	6
Health and Lifestyle routine measure	8
Health and social care practice	9
Conclusion and Recommendation	11
Reference List.....	12

Introduction

Coronary artery disease has become one of the vital **cardiovascular diseases** impacting the entire human population across the world. Based on recent research, it has come forward that the mortality rate due to this disease is higher in the UK. The nature of this disease is unpredictable, as apparently healthy people may develop this disease in the future and the specific reason for this disease is still unclear. Although several studies have proved that the changes in lifestyle is the most common threat and several physiological conditions such as obesity and hypertension are also responsible. In this study, the overall anatomical and physiological condition of patients with coronary artery disease will be discussed thoroughly. The changes that must be done to improve the health conditions of patients and particular social care practices in the UK will also be discussed in detail.

Anatomy and physiology of the health condition

Anatomical changes due to coronary artery disease

Anatomy refers to the structure and body functioning of human beings; in the case of coronary artery disease individual body functioning differs from normal functioning. Therefore, to understand the anatomical difference of the patients with this disease first, the changes in normal functioning of the heart are vital. In normal condition, "Coronary arteries" supply blood and oxygen to the heart and there are two types of "coronary arteries" present: "Left and Right coronary arteries". The left coronary artery again splits into the "left anterior descending artery and the circumflex branch", both contributing blood to the "heart ventricles and left atrium" (Groenewegen *et al.* 2020). The right coronary artery bisects into the "right posterior descending artery and a large marginal branch", both carries blood to the "heart ventricles, right atrium, and sinoatrial node". It is the normal structure and normal functioning of the human heart.

Based on scientific research, it has been proved that this exact heart disease is caused due to plate formation inside the arteries. This anatomical condition reduces the blood and oxygen flow to the "myocardium" and makes the blood vessels to be thinner over time (Ford *et al.* 2020). Therefore, these plates limit the regular functioning of the heart and increase the chance of sudden heart failure. The plates formed inside the arteries are mainly due to ***cholesterol accumulation that shrunken the passage of the arteries causing a distortion in the normal anatomy of the human heart***. The anatomical changes can be shown in the below figure

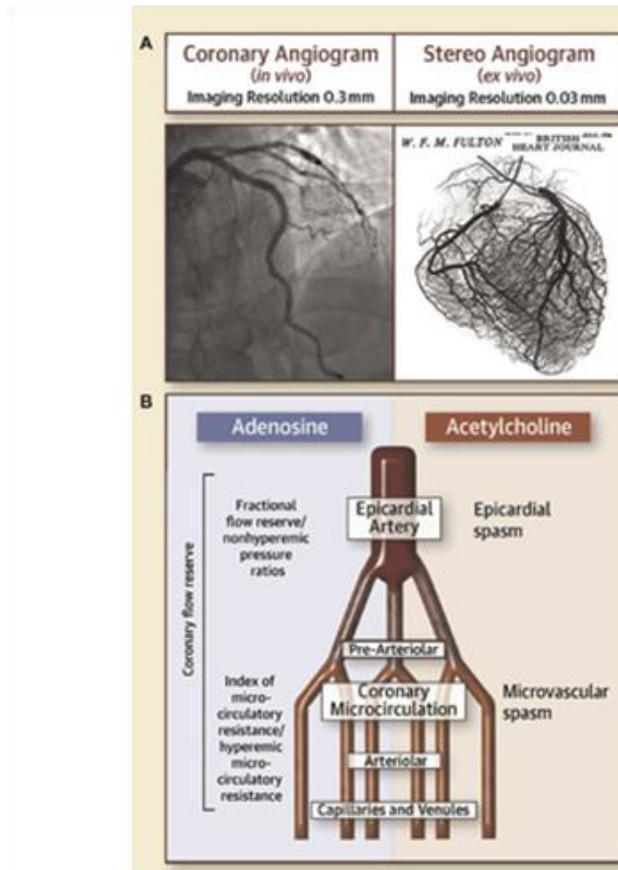


Figure 1: Anatomical changes due to coronary artery disease

(Source: Ford *et al.* 2020)

Physiological changes due to coronary artery disease

Normal physiological condition also alters due to this disease as in this disease, blood and oxygen flow to the heart is reduced greatly affecting the normal physiological condition. The physiological mechanism of this disease displays the condition that happens due to the sudden blockage in the pathway of oxygen supply to the heart. The blocks in the arteries cause a contrast in **“the amount of oxygen flow and actual oxygen requirement”**. Therefore, lack of oxygen causes the tissues of the heart to become **hypoxia**, and this physiological condition leads to heart-attack (Karampetsou *et al.* 2022). Another physiological condition responsible for this disease is a harm or injury in the “endothelium”. After the “endothelium” gets damaged “cholesterol, fats, lipoproteins and other molecules” begin to gather at the site of damage in the arterial wall (Bevan *et al.* 2020). It has been evidenced that high concentration of “lipoprotein” punctures the wall and starts “oxidation”, this physiological mechanism helps these molecules to allure “leukocytes” at the site of injury. The “leukocytes” engulf the molecules causing **“fatty streak”** and become thick, after this smooth muscle cells

get also attracted to the site of injury, accumulate there and start to multiply (Cegla *et al.* 2019). In this way, the formation of plaques in the arterial wall causes the walls to narrow, reducing the blood and oxygen flow through the passage. The physiology of this disease can be shown in the below figure

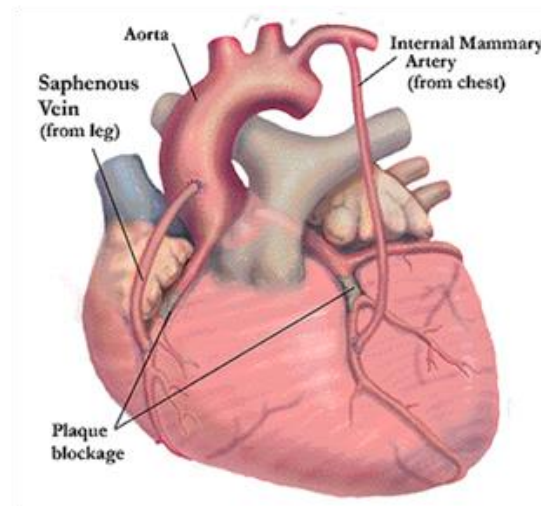


Figure 2: Physiological condition of heart after plaque formation

(Source: Bevan *et al.* 2020)

Body functioning of individuals with this health condition

The health conditions of patients can be divided into two categories; anatomical and physiological although physiological condition is mostly important for medical experts to take necessary actions (Mustafa *et al.* 2020). It has been evidenced that in the **UK** the physiological condition varies in men and women and the rate of heart-related diseases is also higher in men. Men generally have **severe symptoms such as pain in the thorax whereas women suffer mostly due to asthma and dizziness. This** variation is mostly due to variation in lifestyle and women generally develop blockages in the smaller arteries of the heart (Choi *et al.* 2020). Therefore, the health condition of patients must be checked regularly for better prevention. Other physiological conditions include severe chest pain, pain in the left forelimb and pain in the left back. According to medical research it has been proved that anatomical changes are not distinctly visible in this case although the anatomical alteration in the heart can be noticed after proper diagnosis. This condition can be shown in the below figure

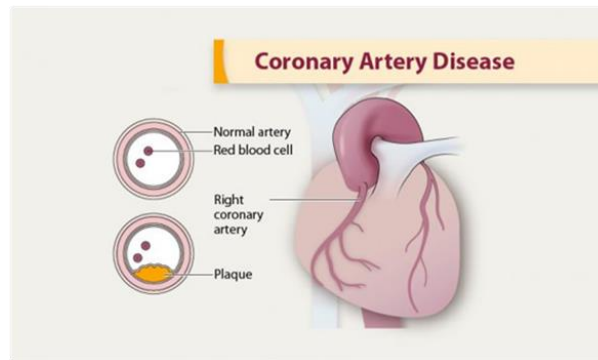


Figure 3: Physiological condition of the heart

(Source: Choi *et al.* 2020)

The anatomical and physical condition of the patients' health may be correlated as both affect the entire blood circulation system of the body. In the **UK** the treatments regarding this disease are improving day by day and the anatomical and physiological changes in patients' health condition are monitored regularly.

The structure and functioning of human body can be shown in the below table

Normal anatomical condition	Normal supply of blood and oxygen to the heart	Normal body functioning
Coronary artery disease	Reduced blood and oxygen flow	Body functioning changes
Anatomy of health condition	Cholesterol accumulation forms plates inside the arteries	Reduced blood and oxygen flow
Physiology of health condition	Plaque formation narrower the arteries	Hampers normal functioning

Table 1: Anatomy and physiology of health condition

(Source: Self-developed)

Based on surveys and interviews individual differences in anatomical and physiological conditions can also be observed. This can be shown in the below table

Individuals	Changes in health condition	Reason
Men	Pain in thorax and severe back pain	Mainly due to blockages in the “right coronary artery” especially in the “large marginal branch”
Women	Asthma and dizziness	Mainly due to blockages in the small artery.

Table 2: Individual differences

(Source: Self-developed)

Health and Lifestyle routine measure

In the **UK the coronary artery disease** has become the most common problem and particularly fast lifestyle and changes in routine is responsible for this disease among men and women (Albuquerque et al. 2019). Based on numerous research it has become visible that some particular factors regarding regular healthcare and routine are responsible for this disease. These factors include excessive smoking, consumption of alcohol and lack of exercise. Physiological factors responsible for this disease are “Obesity, hypertension and diabetes” (Cai et al. 2020). Therefore, it is vital to control these abnormal conditions for preventing this disease. Therefore, regular collection of data in health and social care has helped in the planning of care for individuals and this can be shown in the below table

Different factors responsible for the disease	Effect on the disease	Different healthcare and routine measurements	Impact on patients' health	Noticeable improvement
Diabetes and hypertension	minor	Healthy and balanced diet and fiber-rich food has been applied to the regular routine of patients (Vasudevan <i>et al.</i> 2021)	Huge	Significant changes have been noticed
Obesity	major	Regular exercise has been added to patients' daily routine (Xiao <i>et al.</i> 2018).	Moderate	Slight changes has been noticed
Smoking and alcohol consumption	Major	Smoking has been prohibited and reduced alcohol consumption (Salzwedel <i>et al.</i> 2020).	Huge	Valuable improvements in patients' health have been observed.

Table 2: Health and life-style routine measure

(Source: Self-made)

This table has been made based on recent information collected through surveys and interviews to the patients and their practical experience (Warburton *et al.* 2019). In this way routine data collection has helped the healthcare providers in the UK to apply proper care measures.

Health and social care practice

Every country has different social and healthcare services including tactics and policies to deal with certain health conditions of the patients. In the **UK**, the major disease responsible for the increased mortality rate is coronary artery disease (Tsao *et al.* 2022). Thus, this country has taken some initiatives to fight this situation, the **“Health Research Authority”** and the health sector of the **UK has arranged a special monitoring group to check the health condition of local people regularly**. This group involved interested men and

women from several other fields including caregivers, recovered patients and family members of patients (Timmers and Wilson, 2022). The health sector has started the project to inspire other people to be involved in this program and it will boost the confidence of the sufferers to deal with tough situations.

Another policy initiated by the UK government is that the laboratories for sample testing has improved its research section to give more accurate and secured treatment to the patients. This advanced research system has made it possible to fast decision-making regarding diagnosis and has successfully established a proper timeline. The third initiative has been done by the investors as the improved healthcare system of the **UK** has become successful in providing the best health care services to the patients. Thus, it has allured a lot of new investors to invest in healthcare services of this country. The healthcare sector of the UK is giving much focus on data collection and regular monitoring of patients to understand the success of the implementation of proper health and routine care measures.

Patient	Changes in life-style and routine care	Impact on health	Impact on the disease	Significance
1	Application of healthy diet and proper medication	High	Moderate	Moderate
2	Addition of regular exercise in routine	Moderate	Low	Moderate
3	Applied both healthy-diet and regular physical exercise	High	High	High
4	Applied only medication and no life-style change	Moderate	High	High
5	Applied only life-style changes and prohibition of smoking and alcohol	Moderate	High	High

Table 3: Routine healthcare practices in the UK

(Source: Self-developed)

This current UK policy engaging regular data collection and patients care services has improved the health and social care network to provide the best possible services to the sufferers. The major principles of these new policies are to secure the interests of patients, care providers and investors (Land and Lewis, 2018). The appropriate implementation of these policies has improved the overall methodological framework of the healthcare system. These principles have set the roles and responsibilities of the healthcare organisations at a higher level and that is assisted by the **“Health Research Authority” of the UK**. In the case of coronary artery disease the authority has taken special initiatives to reduce the mortality rate due to this disease.

Conclusion and Recommendation

It can be concluded that the overall scenario of coronary artery disease in the **UK** has been discussed above in detail. The objective of this study was to understand the anatomical and physiological changes the patients with this disease deal with. The changes have been discussed thoroughly and its measurement technique in respect to the **UK** has also been mentioned. In the **UK**, this disease is the biggest cause of death; especially among young individuals the rate of this disease is high. The main reason for this disease in the young population has been identified and these are mainly smoking and alcohol consumption. Therefore, the government has taken rapid action to stop this and has given much focus on reducing the pollution specially; air pollution has been identified as the main environmental factor for this disease.

Finally, it can be recommended that the implementation of new scientific approaches can assist in reducing the mortality rate due to this disease (Spencer *et al.* 2020). The **UK** government has also applied new policies regarding healthcare and are giving much focus on peoples' health. Therefore, it can be expected that with the proper implementations of these policies this situation will be improved in the future. The health sectors are also making people aware about the current scenario of this disease in this country and engaging more people to inspire others that this disease can be deal with proper diagnosis and immediate treatment. Finally, it can be said that by implementing all these strategies the mortality rate due to this disease in the UK will be reduced in the future.

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