

Introduction to Physiology

(BMHP5003_LON)

Assessment Component 2

Written Report

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Introduction

This report aims to explore and analyse the incidence, causes and prevention of cardiovascular disease focusing on key findings from various scientific papers, data research and the analyses of the provided case study. A health assessment report is included based on the answers provided in the health questionnaire.

The aim of a health assessment is to identify a patients' issues and needs. A health assessment is an evaluation of a patient's status and health history; it addresses needs and how the healthcare system can address those needs. An initial assessment determines the nature of the issues and prepares for a plan of action. A Time-lapsed assessment determines the status of the patients' recovery after treatment. An Emergency assessment focuses on quickly identifying the root causes for the purpose of patient stabilisation.

According to the World Health Organization (2017), cardiovascular diseases are a group of disorders of the heart and blood vessels that are currently the leading cause of death worldwide. These diseases cause a higher number of deaths in low-income countries (at least three-quarters of fatalities). The NHS (2018) lists the following as the main types:

- Coronary heart disease arises when the oxygen flow to the heart muscle is reduced or blocked. The strain this causes can lead to angina (chest pain due to restricted blood flow), heart attacks (when there is a sudden blockage to the muscle), heart failure (when the heart is unable to pump blood to the rest of the body).
- Strokes happen when the blood supply to the brain is blocked. This may cause damage to the brain or even death. A transient ischaemic attack (or mini-stroke) is similar, but the blockage is temporary. The main symptoms are droopy face muscles, arm weakness or numbness and speech impairment.
- Peripheral arterial disease happens when the arteries and legs become blocked. This may cause cramping, hair loss on limbs, numbness, and open sores or ulcers.
- Aortic diseases are a category of conditions that affect the aorta. The aorta is the body's largest vessel and is responsible for carrying blood to the body. One of the most common aortic diseases is an aneurysm; this may cause bulging and death in the worst-case scenario due to bursting.
- Heart failure is characterised by the difficulty of the muscle pump (the heart) to pump blood regularly. It is also known as congestive heart failure.
- Rheumatic heart disease is caused by the inflammation caused by rheumatic fever (a pathological response of the body to infections caused by streptococcal bacteria). The

main feature of rheumatic heart disease is an injury to the heart valves and myocardium.

- Cardiomyopathies are acquired diseases that occur directly in the heart, also known as heart muscle or myocardium. They can be generated by difficulty performing contractions or relaxations, preventing the heart from adequately pumping blood.

The symptoms of underlying diseases aren't always apparent, and a heart attack or stroke may be the first sign. Early detection and treatment, as well as prevention, is key (WHO, 2020).

The symptoms of a heart attack include chest pain or discomfort, shortness of breath, faintness, and nausea. The main indicatives of a stroke are sudden weakness of the face and /or limbs, sometimes only on one side of the body. Other symptoms include face and/ or limb numbness, speech impairment, sight impairment, loss of balance and coordination, and loss of consciousness (WHO, 2021).

Case Study

This section presents a brief analysis of the data and responses collected from the patient in the provided questionnaire.

According to the answers, the patient is a 48-year-old female. Height is 1,65 cm and weight 86 kg. She smokes nearly a pack of cigarettes a day, has high blood pressure (180/90), does not exercise, her diet consists mainly of fried food, and her alcohol intake is between 3-6 units a week and higher on weekends. She has never had a heart attack or other conditions. However, her father has had a heart attack at 68, and her sister has high cholesterol.

Health Assessment

According to the data analysed, the patient presents a high risk of developing cardiovascular disease. Her BMI (body mass index) stands at 31.5 and suggests that she is in the obese category for her height. A healthy weight range recommended for her height would be between 50.4 kg and 68.1. She has high blood pressure (also known as the silent killer) and, if left untreated, increases the risk of developing a cardiovascular disease such as stroke or heart attack and a range of other conditions. Blood pressure is considered high when it is 140/90 or higher. The ideal range stands between 90/60mmHg and 120/80mmHg (NHS, 2018). The causes of high blood pressure are well documented and point out to poor dietary patterns such as our patients'. The risk and incidence of cardiovascular diseases are prevalent in the UK

and worldwide. A poor diet plays a part in the incidence of morbidity and premature mortality, and it is characterised by high intakes of saturated fat, confectionery, free sugar and low intakes of fresh fruit and vegetables. Free sugars are linked to weight gain, which increases the risk of cardiovascular disease and mortality. Recent meta-analyses have found that saturated fats lead to high cholesterol. Still, observational studies show that reducing the intake was not a deterrent to the risk of developing cardiovascular disease. However, dietary fibre does lower the risk, as it improves glucose control and lowers cholesterol levels (Gao et al., 2021).

Due to her family history, there is a 60% to 70% risk increase of developing cardiovascular disease (Kolber and Scrimshaw, 2014).

Her smoking patterns place her in the heavy smoker category. Smoking harms nearly every organ in the body, including the blood vessels and the heart. The chemicals present in tobacco harm the blood cells, normal heart functioning, and the structure of the blood vessels. Smoking is a significant risk factor for cardiovascular disease exacerbated when coupled with other risk factors such as the ones present in this case study, including unhealthy cholesterol levels, obesity and high blood pressure (National Heart, Lung and Blood Institute, 2013).

Alcohol intake, in this case, could also be a worrying factor. According to a study conducted by The University Of Cambridge And University College London and published in the British Medical Journal (BMJ), moderate alcohol intake may boost good cholesterol levels in the blood. However, exceeding 14 units a week increases the risk of heart failure, ischemic stroke and cardiac arrest (British Heart Foundation, 2017).

According to the World Health Organisation (2020), the patient presents some major behavioural risk factors leading to cardiovascular disease.

Bhatnagar et al. (2015) reported that cardiovascular diseases as the leading cause of death for women in the UK in 2012.

Recommendations

Medical research on cardiovascular disease has shown that reducing a high-salt diet, eating fruits and vegetables, physical activity, and decreasing tobacco and alcohol use significantly reduces the risk of developing them. The latter, along with the prescription of pharmacological treatments that help control hypertension, diabetes, blood clotting, or any of the possible causes (World Health Organization, 2017).

The patient should aim to lose 4.3 kg to reach a healthy weight range. Regular exercise, such as the recommended 75 minutes of activity a week, including brisk walking, swimming and running, can help losing weight. The NHS (2019) offers free programs that can aid weight loss, such as the Fitness Studio exercise videos, the Strength and Flex exercise plan, and the

Couch to 5K App, which features an easy-to-follow routine involving three runs each week and cardio exercises.

Medication such as diuretics might help with blood pressure, but lifestyle changes such as reducing the salt and alcohol intake and exercising regularly will be more beneficial and effective. Salt intake should be reduced to 6 grams a day, and the calorie intake should be between 1490 and 1915 kilocalories (NHS, 2019).

The patient could reduce or stop smoking. The NHS (2019) offers a range of support options to help people quit, such as the smoke-free App. E-cigarettes are a less harmful option and a good stepping stone to quit smoking (NHS, 2019).

Conclusion

Despite the effort of the Department of Public Health over the years, population dietary modifications are still slow. This is partly due to conflicting and confusing advice given to the population regarding what to consume. Present guidelines focus on nutrients such as saturated fat and free sugars. However, these are also present in foods that are not branded unhealthy per se. Dietary guidelines should focus on foods rather than nutrients to avoid confusion (Gao et al., 2021).

According to Schultz et al. (2018), socioeconomic factors must also be considered when recommending lifestyle modifications. Socioeconomic status has a significant impact on the incidence of cardiovascular health. Inequality and disadvantages accentuate the link between the status and cardiovascular disease. The four measures linked to cardiovascular disease in high-income countries are educational attainment, income level, employment status, and environmental and socioeconomic factors. Moreover, studies point to disparities based on sex, as women tend to have more body fat than men and are more prone to be economically disadvantaged than men.

The high cost of healthy food and limited dietary options in disadvantaged areas may also contribute to the risk of cardiovascular disease. Low-income areas also tend to have more fast-food restaurants than supermarkets.

Psychosocial factors that include depression and stress are also strongly linked to adverse outcomes.

In conclusion, the causes and prevention are subjected to the impact of environmental and socioeconomic factors driven by social and physical attributes such as socioeconomic differences and the availability of resources.

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Appendix

LIFESTYLE QUESTIONNAIRE

Introduction:

In order to help us focus our Health Promotion activities in the practice, we would be grateful if you could fill in this short questionnaire. If you have already completed one on a previous visit, please return this questionnaire to the receptionist.

Name Date of Birth 1-1-1973

Do you smoke? Yes [☒] No [☐]

If Yes, do you smoke less than

1–9 cigarette/day [☐]

10-19 cigarette/day [☒]

20-39 cigarette/day [☐]

more than 40 cigarette/day [☐]

smoke a pipe [☐]

smoke cigars [☐]

If No, have you –

never ever smoked [☐]

given up smoking in the last year not smoked for more than 1 year [☐]

Do you have high blood pressure? Yes [☒] No [☐]

Have you ever had a heart attack or suffered from angina? Yes [☐] No [☒]

Have you ever had a stroke, "shock"
or any weakness down one side? Yes [☐] No [☒]

Have any of the following – mother, father, brothers or sisters had –

a heart attack below the age of 60 a heart attack Yes [] No [☒]

above the age of 60 Yes [☒] No []

a stroke Yes [] No [☒]

trouble with very high cholesterol Yes [☒] No []

(hyperlipidaemia) Yes [] No [☒]

.....

Practice Use Only

Health Education Smoking BP

Height

Weight

..... /

EXERCISE

Healthy exercise usually involves activity that lasts for at least 20 minutes, raises your pulse and produces hard breathing. In younger people this might be running, cycling or sport, or brisk walking for older people.

Do you take this type of exercise –

daily [] 3 times weekly [] once weekly [] once monthly [] seldom [☒]

I cannot take exercise because of disability []

DIET

Please tick the one category which is closest to your usual eating pattern.

I eat no meat, fish or dairy produce []

I eat a mixture including daily fruit and vegetables

I eat a mixture including regular chips and fries [☒]

I eat frozen meals (eg TV dinners) 3 or 4 times/week

I eat mainly snacks []

I eat a special medical diet []

Please specify

ALCOHOL

Please tick the statement which most closely describes your usual average alcohol intake. (1 unit is 1 glass wine, 1/2 pint beer or a single measure of spirit.)

I never drink alcohol []

I drink less than 1 unit per day []

I drink between 1 and 2 units a day []

I drink between 3 and 6 units a day [☒]

I drink between 7 and 9 units a day []

I drink more than 9 units a day on average []

.....

Practice Use Only

Health Education Alcohol [] Alcohol Brief Intervention []