2.2.6 The effect of lifestyle on some non-communicable diseases

AQA GCSE Biology (Higher)
Question and answer notes

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How to use these notes

These notes cover everything you need to know for this part of the specification. They have been written in question-answer format to make them easier for you to study from.

In order to study successfully, I recommend you do the following for each question and answer:

- Read it carefully and make sure you **understand** it.

- **Memorise** the answer.

- **Practice** applying your understanding to past exam questions.

A good way to memorise information is to use **retrieval practice**. This is when you practise retrieving information from your memory. You could do this by making a flashcard for each question with the question on one side and the answer on the other. Or you could use a flashcard app. Alternatively, use a sheet of paper to cover up the answer so you can only see the question. Try to answer the question and then check how you did.

You should practise retrieving each answer from your memory until you can do it perfectly. Even once you can retrieve the answer perfectly, your ability to retrieve it will probably fade as time passes without practising. Therefore you will need to keep going back to the questions that you have previously mastered and practising them again. However, each time you re-learn the answer, the memory will be stronger and will last longer than the time before.

What are risk factors?
Risk factors for a particular disease are things which are associated with having a higher chance of getting that disease. In other words, there is a higher rate of the disease among people who have the risk factor than among people who don't have the risk factor.

What types of things can be risk factors?
Different diseases have different risk factors, however risk factors often include one or more of the following:

- Aspects of a person's lifestyle, such as diet, exercise, smoking and alcohol consumption.

- Substances in a person's body or environment, such as pollutants in the air or drinking water, or ionising radiation.

- A person having particular DNA sequences, for example a particular allele of a gene.

- A person's age.

What is correlation?
Correlation is when two variables change together. It could be that when one increases the other one increases - this is called a positive correlation. Or it could be that when one increases the other one decreases - this is called a negative correlation.

How can correlation be shown?
A correlation between two variables can be shown by plotting the two variables on a scatter diagram. If a straight line of best fit can be drawn with all of the data points lying close to it, then there is a correlation. If the line slopes upwards as it goes to the right, it is a positive correlation. If the line slopes downwards as it goes to the right, it is a negative correlation.

A correlation can also be shown using statistical methods.

What is causation?
Causation is when one thing causes another thing to happen.

Why does correlation not imply causation?
If there is a correlation between variables A and B, it may be tempting to assume that A must affect B - in other words, that changes in A cause changes in B. However, the existence of a correlation between A and B does not prove this. This is because there are other possible explanations for the correlation. These are:

- B could affect A.

- A and B could both be affected by some other variable, C, that we have not looked at.

- The correlation between A and B could simply be a coincidence.

How are correlation and causation related to risk factors for diseases?
A factor is considered to be a risk factor for a particular disease if there is a correlation between having that factor and getting the disease. For example, if it is shown that rates of getting the disease are higher among people who eat a certain food than among people who don't, then eating that food is a risk factor for the disease.

However, correlation does not imply causation. Therefore, knowing that something is a risk factor doesn't necessarily mean that it causes the disease. Some risk factors have been shown to cause the disease, others have not - we simply know that they are correlated with the disease.

Name three risk factors for cardiovascular disease.
Poor diet, smoking, and lack of exercise are all risk factors for cardiovascular disease.

Name one risk factor for type 2 diabetes.
Obesity is a risk factor for type 2 diabetes.

Name one risk factor for lung diseases such as lung cancer.
Smoking is a risk factor for lung diseases such as lung cancer.

Name one risk factor for liver disease and brain disease.
High alcohol consumption is a risk factor for liver disease and brain disease.

Name one risk factor for cancer.
Exposure to carcinogens, such as ionising radiation, is a risk factor for cancer.

Name two risk factors for diseases in newborn babies.
Smoking while pregnant and drinking alcohol while pregnant are both risk factors for diseases in the newborn baby.

Why can it be difficult for scientists to find out what causes non-communicable diseases?
It can be difficult for scientists to find out what causes non-communicable diseases because they are often caused by the interaction between a number of different factors.