Higher Health and Food Technology

Food for Health:

Book 4 ~ Dietary diseases

Outcome 1: Analyse the relationships between health, food and nutrition by:

- 1.1 Explaining benefits to health of a balanced and varied diet
- 1.3 Analysing the function and effects of nutrients on health
- 1.4 Explaining in detail the effects of diet related conditions or diseases on health

Outcome 2: Make and evaluate food products to meet dietary and health needs by:

2.2 Selecting and using appropriate ingredients and cooking methods to make a food product(s) to

meet the dietary and health needs of the specified individual or group of individuals

2.3 Evaluating how the food product meets the dietary and health needs of the specified individual or

group of individuals



Diet-Related conditions	
Obesity	
Coronary heart disease	
Type 2 diabetes	
Osteoporosis	
Anaemia	
Bowel disease	

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Obesity:

This is caused when an individual becomes so overweight that the extra weight is a danger to their health, they are classed as being obese; normally based on being 20% heavier than their ideal body weight.



Effects on health:

Increased risk of high blood pressure due to the heart being put under a lot of strain from carrying extra weight may increase the risk of:

- strokes
- heart disease
- developing Type 2 Diabetes
- some types of cancer,
- strain on joints, e.g. hip knee which may lead to wear and tear and arthritis

Diet related causes	Reasons for high/low intake	Impact on health
High sugar diet	 Foods high in sugar are eaten daily between meals or instead of meals Energy drinks are being consumed on a regular basis to supplement the diet 	High quantities of sugar in the diet provide excess calories which if not used for energy contribute to weight gain/obesity
High-fat diet	 Lack of time leading to less preparation of meals from scratch, leading to high intake of convenience foods Greater reliance on take away foods 	Fat not used for its normal function results in excess calories being stored by the body leading to weight gain, Over a period of time this can lead to obesity .

	 More disposable income available leading to eating out of the home 	
Reluctance to eat fresh fruit and vegetable s	 Some people prefer to snack on high-fat and sugar foods rather than fruit and vegetables. There may be limited availability in the home due to cost or lack of knowledge about how to prepare these foods Peer pressure especially amongst teenagers 	Fruit and vegetables contain fibre so give a feeling of fullness in the diet. A lack of fruit and vegetables often results in snacking on high fat/sugar foods, providing the body with excess calories therefore contributing to obesity.
Increased consumpti on of pre-prepa red convenien ce meals in the home	 Lack of time to prepare meals from scratch Lack of skills to prepare foods from scratch Single person households, lack of motivation to cook/prepare foods 	Many pre-prepared foods/convenience foods lack sufficient quantities of fresh fruit and vegetables and are high in fat increasing the risk of weight gain/obesity if consumed on a regular basis.

Non- dietary Causes	Reasons	Impact on health
Advertising and media	Promotion of high fat/sugar foods and drinks in magazines and during popular programmes making	As these foods are often high in fat/sugar a high consumption of these foods leads to additional calories which are then stored in the body as fat contributing to obesity.

	them appealing and increasing consumption Many food offers in store promote foods high in fat/sugar	As the foods are priced lower consumption may increase. This may result is excess calories in our diet contributing to obesity.
Lack of exercise and physical activity	 Increased use of cars by all members of the family, e.g. teenagers do not walk to school. Lack of sports facilities locally or the cost may be too high. An increasing number of teenagers just watch TV or play computer games. Parents may be inactive and not encourage teenagers to take part in sports outside school. 	Calories consumed are not being used for physical activity and therefore being stored in the body contributing to weight gain/obesity . Lack of facilities and an increased need to travel to take part in sport may decrease motivation and reduce participation increasing the risk of obesity .
Family income	 Where income is limited, cheaper, poorer quality foods may be bought often high in fat/sugar, in preference to more expensive protein foods or fruit and vegetables. Foods high in fibre such as fruit and vegetables may not be purchased by families on a low income for fear of waste Where there is disposable income (Excess) more money is available to eat out with the home/take away meals or luxury foods on a regular basis 	This may result in higher fat/sugar foods being purchased and consumed on a regular basis so increasing the risk of obesity . Fruit and vegetables contain fibre so give a feeling of fullness in the diet. A lack of fruit and vegetables often results in snacking on high fat/sugar foods, providing the body with excess calories therefore contributing to obesity .
Lifestyle	Lack of time for shopping – hence the preference for quick-to-prepare meals which require little	Convenience foods are often high in fat and sugar, therefore regular consumption could increase calorie intake and

foods very useful for busy families.

Coronary Heart Disease (CHD)

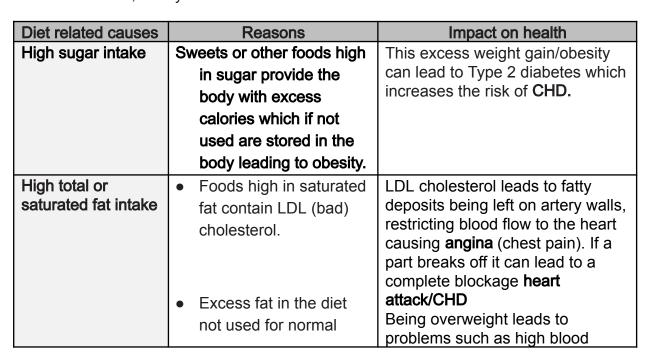
Heart disease results when the arteries that carry blood from the heart become narrowed with a gradual build-up of fatty material, called cholesterol.

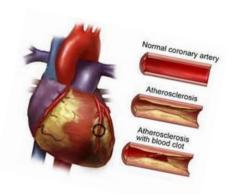
Effects on health:

Narrowed arteries may struggle to deliver enough oxygen-rich blood to the heart. The heart is starved of oxygen, which can lead to angina (chest pains). If a piece of cholesterol breaks off, it may cause a blood clot to form and block the arteries. If the blockage is close to:



• the brain, it may cause a stroke





	functions will be stored as fat, contributing to obesity.	pressure or diabetes, both of which are risk factors that can lead to heart disease/CHD
High salt intake	Too many processed foods in the diet can contribute to a high salt intake, which causes blood pressure to raise.	High blood pressure increases the pressure on the heart and therefore contributes to CHD .
Too few polyunsaturated fats:	Polyunsaturated fats/omega 3 help reduce LDL cholesterol from the arteries.	As omega-3, an essential fatty acids, helps reduce cholesterol from building up, a lack of this essential fatty acid in the diet increases the risk of CHD If blood clots form they can lead to
	 Polyunsaturated fats reduce the risk of blood clots forming. 	partial or total blockage of the arteries or travel round the body increasing the risk of CHD
Diet low in dietary Fibre	These foods give a feeling of fullness preventing snacking on high fat sugary foods.	When foods high in fat/sugar are consumed excess calories are stored in the body contributing to obesity, this increases the risk of CHD.
Too little fruit and vegetables in the diet	 Fruit and vegetables are good sources of antioxidant vitamins – the ACE vitamins, which prevent 'free radicals' from being neutralised gives us some protection against heart disease. ACE vitamins also slow down the rate at which LDL cholesterol is deposited on the artery walls 	This may cause cell damage increasing the risk of CHD. The lack of antioxidants will reduce the LDL cholesterol being broken down and removed from the arteries, increasing the risk of CHD.
High alcohol intake	 Alcohol is high in calories and excess energy will be stored in the body 	Excess calories are stored in the body contributing to obesity, this increases the risk of CHD.

Lifestyle causes	Reasons	Impact on health
Obesity/Overwei ght	 Lack of time to prepare foods may increase the consumption of ready meals/takeaway meals. These are often high in calories/fat. Lack of physical activity 	Being overweight leads to problems such as high blood pressure or diabetes, both of which are risk factors that can lead to heart disease/CHD
Lack of regular exercise	 Unbalanced diet Exercise reduces stress, where there is a lack of exercise blood pressure increases Regular exercise helps maintain a healthy body weight, a lack of exercise con contribute to obesity 	When blood pressure increases, it creates pressure in the artery walls increasing the risk of CHD. Obesity/ Being overweight leads to problems such as high blood pressure or diabetes, both of which are risk factors that can lead to heart disease/CHD
Smoking	 Tar in cigarettes thickens blood, increasing the risk of blood clots. Nicotine also makes the heart muscle work harder so increasing the pressure on the heart leading to High blood pressure 	pressure in the artery walls increasing the risk of CHD.

Low Income	This may result in poor eating choices as many foods on offer, tend to be high in salt, fat and sugar this may result in obesity.	Being overweight leads to problems such as high blood pressure or diabetes, both of which are risk factors that can lead to heart disease/CHD
High Income	This leads to greater disposable income so families may choose to eat out more. Eating a balanced diet which are low in fat/sugar and salt are more difficult so energy input and output may not match.	Excess calories are stored in the body contributing to obesity, this increases the risk of CHD. Foods high in salt increase blood pressure, creating pressure in the artery walls increase the risk of CHD.

Diabetes

During digestion food is broken down into glucose and used for energy. The pancreas, makes a hormone called insulin to help the glucose get into the cells of our bodies. When you have diabetes, your body either doesn't make enough insulin or can't use its own insulin as well as it should, resulting in a build-up of sugars in the blood.

Type 2 Diabetes

Occurs when there is not enough insulin produced or the insulin that is made by the body doesn't work properly.

This type affects people as they get older but is becoming common in young children, teenagers and overweight/obese people due to a poor

diet. This type is usually treated with a healthy diet, including complex carbohydrates.

Effects on health:

People with diabetes are more at risk of:

- Heart disease
- Strokes
- High Blood Pressure
- Kidney Failure
- Blindness
- Circulation problems, which may result in amputation of one or both legs

Diet related causes	Reasons	Impact on health
High sugar diet	Sweets contain high quantities of or sugar which can contribute to weight gain, especially if eaten daily between meals or instead of meals	Weight gain increases the need for insulin. The pancreas cannot then produce enough insulin so blood sugars are not broken down and the risk of type 2 diabetes increases
High-fat diet	Fast foods and snack consumption are both high in fat. These are popular especially with teenagers and have a high fat and energy content and can lead to weight gain	Weight gain increases the need for insulin. The pancreas cannot then produce enough insulin so blood sugars are not broken down and the risk of type 2 diabetes increases
Reluctance to eat fresh fruit and vegetables	Some people prefer to snack on high-fat and sugar foods rather than fruit and vegetables. There may be limited availability in the home due to cost or lack of knowledge about how to prepare these foods.	This results in a lack of dietary fibre which helps maintain lower blood sugar levels so increases the risk of type 2 diabetes
Increased consumption of	These foods can be high in fat and sugar so may lead to weight gain	Weight gain increases the need for insulin. The pancreas cannot then produce enough insulin so blood sugars are

pre-prepared	not broken down and the risk of type 2 diabetes increases
convenience	or type 2 diabetes increases
meals in the	
home	

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Increased consumption of pre-prepared convenience meals in the home	These foods can be high in fat and sugar so may lead to weight gain	Weight gain increases the need for insulin. The pancreas cannot then produce enough insulin so blood sugars are not broken down and the risk of type 2 diabetes increases





Osteoporosis:

Osteoporosis means 'porous bones' and is also known as brittle bone disease, this is where our bones lose some calcium.

Osteomalacia results when, due to a lack of vitamin D, calcium or phosphorus, adults' bones become brittle.

Effect on health:

Bones become thinner and weaker, which makes them more liable to break. Some individuals experience backache or notice they are getting shorter and developing a due to the spine bones becoming weaker.

Diet related causes	Reasons	Impact on health	
High fat/saturated fat Intake	 Fats form insoluble soaps with calcium preventing absorption 	A lack of calcium in the diet increases the risk of osteoporosis	
Lack of Calcium / Phosphorus/ Vitamin D	These three nutrients work together to ensure bones are strong. If any of the elements are missing from the interrelationship then bones will become/form weak	A s a result bones will become brittle easier therefore they are more likely to develop osteoporosis or fractures will take longer to heal.	
High intake of dietary fibre	High intakes of fibre can result in calcium being removed from the body	A lack of calcium in the diet increases the risk of osteoporosis	
High sodium intake	Too much sodium in the diet causes calcium to be lost from the bones	Bones become weaker and therefore the risk of osteoporosis increases	

Lifestyle causes	Reasons	Impact on health		
Smoking	Nicotine leads to bone loss	Bones become weaker therefore increasing the risk of osteoporosis		
Lack of exercise	Exercise strengthens bone mass, therefore this any result in bones becoming weaker.	Bones become weaker therefore increasing the risk of osteoporosis		
Too much alcohol	Alcohol is a toxin to the bone	This will put you at greater risk		
	cells which may lead to	of developing osteoporosis		
	decreased bone density.	in later life.		

Anaemia:

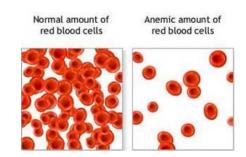
WHAT IS IT?

Red blood cells do not have their full quota of haemoglobin – resulting in less oxygen being carried around the body and cells not working efficiently

SYMPTOMS INCLUDE: tiredness, listlessness, pale skin, breathless.

VUNERABLE GROUPS:

- Adolescent girls and women who are menstruating
- Pregnancy
- Babies store only lasts first 4 months/Children
- Vegetarians especially vegans



Diet related causes	Reasons	Impact on health
Lack of Iron rich foods	 Iron rich foods provide the body with haemoglobin which helps transport oxygen around the body 	A lack of iron could result in tiredness and a lack of breath which can cause additional health problems
Low intake of Vitamin C	Vitamin C is needed to change iron into a more absorbable state, a lack of vitamin C would make the iron unavailable to the body.	This can lead to iron deficiency anaemia, with other symptoms such as tiredness, paleness and a lack of breath also may be shown
Snacking on foods	 Snacking on foods may result in nutrients being missed in the diet. This can result in a lack of iron. Many snack foods are high in fat. Fats especially saturated fats 	A lack of iron over a period of time in the diet could result in iron stores being used up by the body resulting in anaemia. Iron will be removed from the body without being used leading to iron deficiency anaemia

	combine with iron to form insoluble soaps this result in the iron being unavailable to the body	
High intake of dietary fibre/Phytic acid (found in green leafy vegetables)	 Increased fibre (18g per day) is recommended in current dietary advice, if high levels of fibre are consumed with iron rich foods these bind with the iron and remove them from the body 	Iron will be removed from the body without being used leading to iron deficiency anaemia

Lifestyle factors	Reasons	Impact on health
Religion/moral beliefs/	Less red meat may be eaten for health or personal choice reasons, e.g. vegetarians or to reduce saturated fats	Less iron is provided in the diet so increasing the risk of anaemia with all associated
		You may have less resistance to infection and you may feel the cold more.

Bowel Disorders

WHAT IS IT?

A number of different diseases can be categorised as bowel disorders. These include constipation, diverticular disease and bowel cancers.

SYMPTOMS INCLUDE: abdominal pain, flatulence, diarrhoea **CAUSE**:

- Low fibre diet
- Too many refined/convenience foods
- High fat/red meat in the diet
- lack of physical activity

VUNERABLE GROUPS: Elderly/Children/Teenagers.

How do bowel disorders affect your health?

Diet related causes	Reasons	Impact on health
Lack of fibre	This results in faeces being hard leading to pain/ strain on the muscle walls	Can lead to bloating, wind, constipation and diverticular disease
Lack of water	Water is needed with fibre to soften faeces. If there is a lack of water then waste becomes hard and difficult to remove from the body	As a result constipation along with the other symptoms (wind/bloating) can occur. Removing waste from the body can cause the walls of the intestine to weaken due to the additional pressure, pockets form leading to diverticulis. If pouches become infected by waste then this can lead to extra pain/infection
Lack of fruit and vegetables in the diet	 Some people prefer to snack on high-fat and sugar foods rather than fruit and vegetables. This results in a diet low in NSP Fruit and vegetables also contain water which if lacking can make waste hard 	As a result the muscular walls of the intestine have to work harder to move the faeces along which can lead to constipation and diverticular disease
Increased consumption of pre-prepared: convenience meals in the home/eating out	 these foods can be very low in dietary fibre and high in fat and sugar The foods may also be high in calories which will contribute to weight gain if energy is not used up 	Can lead to bloating, wind, constipation and diverticular disease As extra fat is consumed it is thought there is a link between fat and bowel cancer so the risk would increase Obesity is also linked to bowel cancers so consumption of convenience foods over a long period of time will increase risk.

Lifestyle factors	Reasons	Impact on health		
Lack of Regular	Regular exercise improves the	Without regular exercise this		
exercise	effectiveness of the digestive	reduces the effectiveness of		
	system helping push food along	the bowel making constipation		
	the gut and through the bowel	more likely, which over a		

		period of time can lead to other bowel disorders	
Lack of time/skills	A lack of time to prepare fresh foods/skills to prepare fresh foods can lead to a reliance on convenience foods. These	As these foods chosen to not provide adequate amounts of fibre faeces will not become soft making them harder to	
	foods are often high in fat/sugar and salt and low in fibre or fresh vegetables.	remove from the body increasing the risk of constipation and other bowel disorders	

Additional information

Constipation:

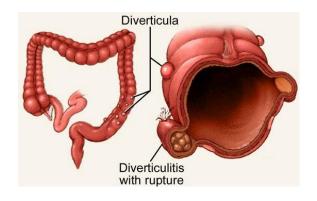
- Constipation is usually caused by a lack of fibre and water in the diet
- Faeces become hard and difficult to remove from the body

Diverticular disease:

- If extra stain is put on the muscular walls of the small intestine because of constipation, then diverticular disease may develop.
- If the faeces are small and hard due to a lack of NSP and water, then the muscular walls of the intestine have to work harder to move the faeces along.
- This results in increased pressure in the intestine. Pouches of the bowel lining are forced through weak spots in the intestinal walls to form small pockets, called diverticula, and where they occur the subject is said to be affected by diverticulitis.

Bowel Cancer:

- Research has shown that a diet high in fat and red meat and low in fibre, fruit and vegetables can increase the risk if bowel cancer.
- Obesity, high alcohol intake and lack of exercise have also been linked to bowel cancer.



Learning Activities

Activity 1

Using the following headings complete a set of notes for each of the dietary diseases.

- Name of disease
- Cause
- Symptoms
- Prevention
- Most at risk

You can use both your course notes and the resource area in the classroom to complete this task.

EXAMPLE:

Name of disease: Anaemia

Cause: Lack of iron in the body, due to poor absorption or lack of iron in the diet.

Symptoms: Less haemoglobin in red blood cells resulting in tiredness, shortness of oxygen, body cells not

functioning correctly, tiredness.

Prevention: -Ensure diet contains sufficient amounts of iron, e.g. eggs, red meat green leafy vegetables.

-Avoid too many foods containing NSP or Phytates as less iron will be absorbed easily absorbed.

-A course of Iron tablets.

Most at risk: Infants, teenagers (especially females), women especially pregnant or breastfeeding, vegetarians

Activity 2

Anaemia prevention/Iron revision

- 1. Which vitamin works with iron to change it into a form more easily used by the body?
- 2. When iron is lacking which nutrient will help produce haemoglobin.
- 3. Identify one group of people who are a t risk of anaemia.
- 4. Identify and explain two factors that increase the risk of iron deficiency anaemia.
- 5. List 4 foods rich in iron
- 6. List 4 foods rich in vitamin C

Activity 3

1.	What is the deficiency disease caused by having too little had (1)	aemog	lobin?	
2.	What is the main health benefit of having Omega 3 in the die	et?		(1)
3.	What does the abbreviation CHD stand for?		(1)	
4.	How does tooth decay begin?		(1)	
5.	Give 2 reasons for diverticulitus.	(2)		
	Identify and explain 2 ways to prevent obesity.		(3)	
7.	Explain 2 health problems associated with obesity			(2)
	What is osteoporosis?	(1)		
9.	Explain the term safe intake?		(1)	
10	. What does the tern DRV stand for?		(1)	
11	. What does the abbreviation RNI stand for?		(1)	

Exam Style Questions

- Explain four health problems associated with obesity
 (4)
- 2. Explain one cause and one effect on health of each of the following dietary diseases.

	Hypertension	
	OsteoporosisCoronary heart disease	(8)
	Explain two groups of people other than teenage girls who are like anaemia. (2)	ly to suffer
4. •	Evaluate the suitability of the following meal for someone training for marathon: Broccoli and orange soup Wholemeal roll Pasta with tuna, tomato and herb sauce	or a half
5.	Describe four dietary guidelines for weaning	(4)
6.	Evaluate the suitability of this packed lunch for a nursery child. Wholemeal sandwich filled with cheese and tomato Water Chocolate covered raisins Tube of yoghurt	(4)
	Evaluate the suitability of the following menu for a person who suff hypertension Mackerel pate with oatcakes Cheese and onion flan Green salad with baked potato Fresh fruit with cream	ers (5)
8.	Evaluate the use of ready meals for a convalescent (4)	
9.	Evaluate the suitability of the following meal for a person with a far of	mily history
•	disease. Orange and melon cocktail Baked salmon wrapped in puff pastry Chips Steamed broccoli Cheese and oatcakes	(6)
10	Describe four dietary guidelines to help reduce the risk of dental cateenagers (4)	111 63 III

Diverticlitus

2011 ~ Health and Food Technology paper

Q1 (d) Explain three dietary factors which may contribute to dental caries. (6)

2011~ Health and Food Technology paper

Q4 (c) Explain two dietary factors which may contribute to obesity. (4)

2012~ Health and Food Technology paper

Q1 (e) I Explain two factors, other than diet, which can contribute to coronary heart disease (CHD). (4)

2012~ Health and Food Technology paper

Q2(c) Explain three factors which may help to prevent osteoporosis. (6)

2013~ Health and Food Technology paper

Q1(b) Explain three dietary factors which may contribute to obesity (6)