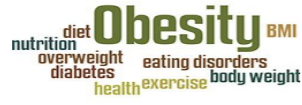


Section 1—Food Nutrition & Health

Diet, Nutrition & Health



Diet-related Medical Conditions

Bowel Cancer

- Bowel cancer is the second-biggest illness/ cause of death in the UK.
- The risk of bowel cancer and diverticular disease can be greatly reduced by increasing fibre/NSP intake.

Iron Deficiency Anaemia

- Anaemia is common in teenage girls due to menstruation.
- Symptoms of anaemia include tiredness, lack of energy, shortness of breath and pale complexion.
- Pregnant women also need increased iron supplies in the diet.

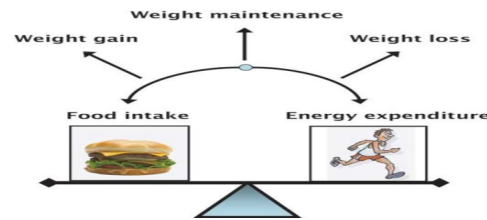
- Anaemia is simply diagnosed with a blood test.

Dental Health and Bone Health.

- Sugar is a major cause of tooth decay in children.
- Sugar increases acids on the teeth, causing irreparable damage.
- In tooth decay, acids erode the protective white enamel surface of the teeth.
- Osteoporosis is common in old age. Bones can become weak, brittle and more likely to break. It also causes the spine to curve forward, making walking difficult.
- A diet rich in calcium and vitamin D is required to ensure maximum bone strength.

Obesity, Coronary Heart Disease and Type 2 Diabetes

- Obesity is an abnormal accumulation of body fat. Obesity is associated with coronary heart disease, diabetes, types of cancer and high blood pressure.
- CHD is caused by fatty substances (cholesterol)
- Arteries narrow, reducing the supply of oxygen to the heart.
- Diets high in saturated fats produce cholesterol. Everyone should reduce their intake of saturated fat.
- High blood pressure can lead to an increased risk of stroke. High blood pressure can be linked to increased salt intake. Salt can be hidden in processed foods. We are recommended to reduce our salt intake.
- In type 2 diabetes too little or no insulin is produced in the pancreas, resulting in high levels of sugar in the blood.
- Diabetes is controlled by careful management of sugar in the diet, plus insulin medication frequently injected.
- Type 2 diabetes is increasingly linked to obesity.



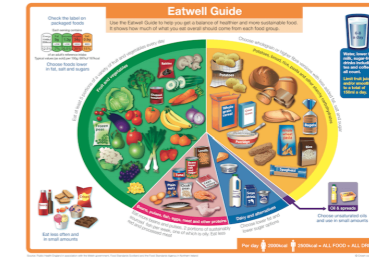
Energy Needs

- Energy is required for us to grow, to keep the basic functions of our body going, and to be physically active.
 - Energy requirements depend on your **Basal Metabolic Rate (BMR)**. BMR is the energy needed by the body to power your internal organs when completely at rest.
 - An individual's BMR depends on their age, gender and body size.
 - We use energy for movement of all types, known as **Physical Activity Level (PAL)**. More physically active people require more food to supply their energy needs.
 - Nutritionists devise **Estimated Average Requirements (EARs)** tables that provide guidelines to energy needs at various stages of life.
 - Malnutrition is a result of under consumption of nutrients. Anorexia and bulimia can lead to malnutrition symptoms.
- #### Energy Intake and Expenditure
- The amount of energy calories (kcal) or kilojoules (KJ) a food contains/ gram is known as **energy density**. (fat = 9kcal/g; Protein = 4kcal/g; Carbohydrate = 4 kcal/g)
 - What we weigh depends on the balance between how much energy we use up by being physically active.
 - Government guidelines state that we need to undertake 60 mins aerobic activity every day.
 - Reference Intake (RI) is the recommended amount of each nutrient that is required to eat daily. These replaced GDA in some instances.

Body Mass Index

- Body Mass Index (BMI)** is a measure that adults can use to see if they are a healthy weight for their height.
- The ideal healthy BMI is between 18.5 & 25

Making informed food choices



- Base your meals on starchy carbohydrates
- East lots of fruit and vegetables (5-7/ day)
- Eat plenty of fish, including oily fish
- Cut down on saturated fat and sugars.
- Eat less salt—no more than 6g/ day
- Don't get thirsty (6-8 glasses/ day)
- Don't skip breakfast



Babies

- New-born babies should have only milk for the first 4-6 months of life.
- First milk is called **colostrum** and is full of antibodies.
- Human milk provides babies with all their nutritional requirements, except for iron. Babies are born with a supply of iron stored in the liver.
- The introduction of solid foods is called 'weaning'.

Children

- Toddlers ages 1-3 years grow rapidly and so it is essential they get a well-balanced diet to support their physical development.
- Toddlers are physically very active and need a good supply of fat, which also helps the development of the brain and nervous system.
- New healthy foods need to be introduced in an attractive and appealing way.
- Sweets, biscuits, cakes and fizzy drinks must be avoided. Sugary foods cause dental decay and are strongly linked to obesity.



Teenagers

- Adolescence is a period of rapid growth and this is when **puberty** occurs.
- The need for energy and most nutrients is relatively high.
- After **menstruation** begins, girls need more iron to replace blood losses. **Iron-deficiency anaemia** is common in teenage girls.

Pregnancy

- A healthy diet is required in pregnancy to ensure the baby receives the essential nutrients required for development.
- Folate (Folic acid) is needed both before and during early pregnancy for the development of the neural tube of the **foetus**.
- The baby's bones require a good supply of calcium from the mother's diet.
- A pregnant mother will need a diet rich in iron for the production of additional blood supply and to lay down an iron store in the baby's liver.
- Constipation is common in pregnancy so a diet high in dietary fibre (NSP) is important.



Older people

- In older people energy requirements decrease. They will require smaller portions at meal times.
- Older people need to keep hydrated by drinking plenty of fluids.
- Osteoporosis** may occur when bones become weak, brittle and break easily.
- Older people are advised to eat calcium-rich foods to help



Key Words:
Eatwell Guide
Colostrum
Puberty
Menstruation
Iron-deficiency anaemia

Protein

- Protein is a macro nutrient.
- Protein is formed from chains of simpler units called **amino acids**.
- 8 Amino acids need to be provided by the diets and are called **essential amino acids**. Children need 10.
- Protein is used for specific functions in the body: growth, repair, maintenance, and as a secondary energy source.

Sources of Protein

- Animal sources—meat, fish, poultry, milk, eggs, cheese, insects.
- Plant sources—soya, nuts, seed, pulses, mycoprotein (Quorn) TVP.

The Biological Value of Proteins

- Biological value means the amount of essential amino acids present.
- Animal protein contains them all and called HBV (high biological value) this includes mycoprotein and TVP.
- Proteins from plant sources lack some essential amino acids and called LBV (low biological value). The exception is soya, this is HBV.

Protein complementation

- Protein of LBV can be eaten together to provide all the essential amino acids e.g. beans on toast.
- Protein complementation is practically important for vegans and vegetarians.

Protein Excess & Deficiencies

- Excess protein in the diet is used as energy.
- Deficiencies are rare but in developing countries **kwashiorkor** is a severe form of protein malnutrition.
- Some groups of people have a higher need for protein. They are:
Babies & Children—growth
Adolescents—growth spurts
Pregnant women—growing the baby
Nursing mothers—lactation

Fat

- Fat is a macro nutrient.
 - Fat is made up of **fatty acids** and **glycerol**.
 - Fatty acids can be described as **saturated** or **unsaturated fats**.
 - The structure of fatty acids influences their effect on our health.
- #### Sources of Fat
- Saturated fats (can increase cholesterol level in the blood):
- include butter, ghee, lard, cream, hard cheese, meat pies, coconut oil and palm oil.
 - Unsaturated fats (can help reduce cholesterol in the blood)
- include oily fish, nuts, seeds, avocados, vegetable oils, soya beans and some functional foods.

Hydrogenated Fat & Trans Fats

- Making solid fat from a liquid oil is called **hydrogenation**.
 - Trans fats can be formed when oil goes through the hydrogenation process. This occurs as the molecules flip and rotate.
- #### Functions of fat
- Provides concentrated energy.
 - Source of fat-soluble vitamins A,D,E & K.
 - Protections for the major organs in the body.
 - Component of hormones.

Fat Excess & Deficiencies

- Fat is only needed in small amounts, excess can lead to weight gain.
- Excess saturated fat raises blood cholesterol levels.
- Trans fats have been linked to health problems including heart disease and some cancers.
- Fat deficient in babies and children could affect normal growth.
- Fat deficiency could result in a poor supply of fat-soluble vitamins.

Carbohydrate

- Carbohydrate is a macro nutrient.
- The body's cells require a constant supply of glucose, which is used as fuel to provide energy
- Sugars and starches are types of carbohydrate.
- Dietary fibre** is also a type of carbohydrate but it cannot be digested to provide energy.
- Carbohydrates are produced mainly by plants during the process of **photosynthesis**.
- Carbohydrates can be classified according to their structure:

Functions & Sources of Carbohydrate.

Monosaccharides	Disaccharides	Polysaccharides
Simplest form of carbohydrate structure. They include: -Glucose (all over carbohydrate is converted into this in the body. -Galactose (found in the milk of mammals. -Fructose (found in fruit)	Complex sugars that are formed when 2 monosaccharides join together. They include: -Sucrose (1 glucose + 2 fructose) -Maltose (2 units of glucose linked) -Lactose (1 glucose + galactose)	Made up of many monosaccharides units joined together. They include: -Starch (many glucose units formed together) -Glycogen (formed after digestion) -Dietary fibre -Dextrin (toasted crust on bread/ sugars caramelize on the surface) Cellulose (formed by plants from glucose. -Pectin (Found in fruit, forms a gel on cooking)

- Sugars are digested quickly in the body, providing instant energy.
- Starches have to be digested into sugars before absorption this is slow energy release.
- Eating starchy foods rather than sugary foods is the healthier way to provide the body with energy. Found in bread, rice, pasta, breakfast cereals and potatoes.
- Sugars are found in a variety of sources including table sugar (sucrose), honey and jam, fruit juice, sweets and chocolate, fruit and vegetables.

Excess & Deficiencies of Carbohydrate

- Excess carbohydrate is converted to fat and is stored under the skin; this is the main cause of obesity.
- Excess sugar in the diet is linked to dental decay.
- There is evidence to suggest that the rise in Type 2 diabetes is linked to diets high in sugar.
- If insufficient carbohydrate is eaten, the body will firstly start to use protein and fat as an energy source.

Dietary Fibre

- The scientific name for fibre is **Non-Starch Polysaccharide (NSP)**.
- Soluble NSP absorbs water, forming a gel-like substance. It can inhibit the absorption of cholesterol.
- Insoluble NSP is not absorbed by the body. It passes through the body as waste, which helps prevent bowel diseases.

Functions & Sources of dietary fibre

- Dietary fibre makes food matter passing through the intestines soft and bulky.
- Dietary fibre can be found in wholemeal bread, wholegrain breakfast cereals, wholemeal pasta and wholemeal flour; fruit and vegetables; potato skins; dried fruit, nuts and seeds, beans, peas and lentils.
- Adults should consume at least 18g of fibre/ day.
- Young children must gradually add high fibre foods to their diets.
- Fibre deficiency can lead to:
- **Constipation**—this is when faeces become difficult to expel from the body because they are hard and small.
- **Diverticular disease**—pouches form in the intestines, which become infected with bacteria.
- A low fibre diet can be linked to cancer, particularly bowel cancer.

