MAR GREGORIOS COLLEGE OF ARTS & SCIENCE

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DEPARTMENT OF ENGLISH

SUBJECT NAME: FOOD AND NUTRITION

SUBJECT CODE: SC5AA

SEMESTER: II

PREPARED BY: PROF. S. HABEEBUNISA BEGUM

FOOD AND NUTRITION

UNIT –I Definition of food, Nutrition, Nutrient, Nutritional status, Dietetics, Balance diet, Malnutrition, Energy (Unit of energy-Joule, Kilocalorie). Immunity by food and function of food.

UNIT-II Carbohydrate, Protein, Fat, Vitamin and Minerals (Calcium, Phosphorous, Sodium, Potassium, Iron, Iodine, Fluorine) -Sources, Classification, Function, Deficiencies of these nutrients. Function of water and dietary fibre.

UNIT-III BMR: Definition, factors affecting BMR and total energy requirements (Calculation of energy of individuals)

UNIT-IV Basic five food groups, nutritional significance of cereals, pulses, milk, meat, fish, vegetables, egg, nuts, oils and sugars. Food toxins, Food additives, Food quality, Safe food handling, Food adulteration, Preservatives and Packaging.

UNIT-V Principles and Objectives of meal planning. Diet for an infant, preschool child, School child, normal male and female of different occupations.

UNIT –I Definition of food, Nutrition, Nutrient, Nutritional status, Dietetics, Balance diet, Malnutrition, Energy (Unit of energy-Joule, Kilocalorie). Immunity by food and function of food

Definition of Food

Food can be defined as any nutritious substance that living organisms eat or drink to promote growth, sustain life and provide energy.

Nutrition

Each dish is made up of one or more ingredients. These ingredients are obtained from either plants or animals and they contain some components that are needed by our body. These components are called nutrients.

The major nutrients in our food are named carbohydrates, proteins, fats, vitamins and minerals. Besides these nutrients, food also contains dietary fibres and water which are also needed by our body.

Image source: https://www.verywellfit.com/

Nutritional Status

The nutrients taken through the diet in the body determines the condition of the body and the ability to maintain normal metabolic integrity can be defined as nutritional status. When our body receives all the nutrients in appropriate amounts so as to meet the needs of the body, then we are in the state of good nutrition. We have a normal nutritional status.

For adults, general adequacy is assessed by measuring weight and height; the result is commonly expressed as the body mass index, the ratio of weight (kg) to height^2 (m^2).

Source Image: https://parenting.firstcry.com/

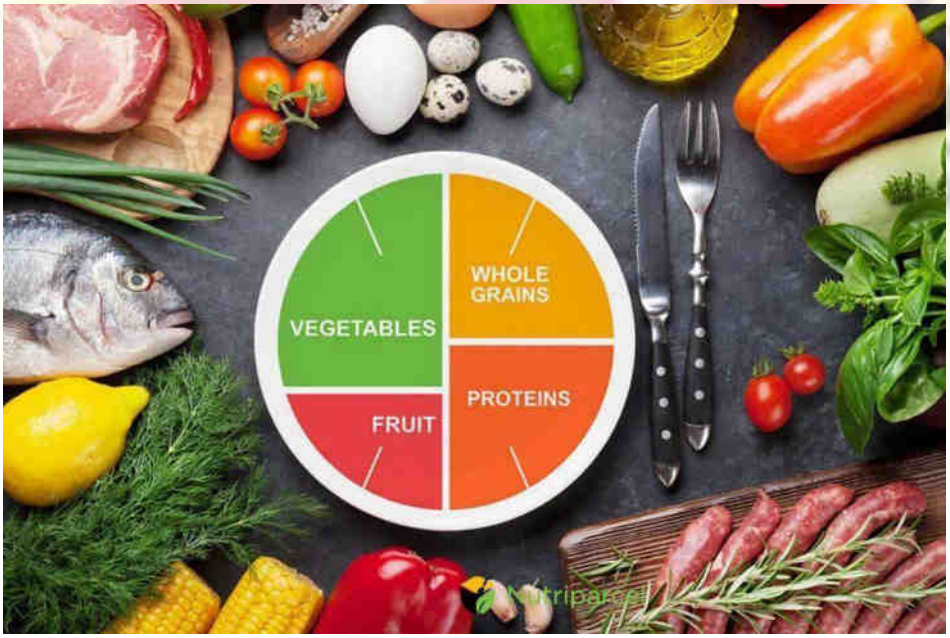
Dietetics

Dietetics is defined as the science of how food and nutrition affect human health. In other words, the field of dietetics determines how nutrition and good eating habit play a vital role in determining overall health and also places a strong emphasis on public health to educate all human beings, about the importance of making proper dietary choices. ' A person who chooses to work in the dietetic field is often called a dietician or nutritionist. The term 'dietitian,' is used to describe a practitioner of dietetics. It was in use long before the science of nutrition had become an accepted discipline. The first use of the title of 'dietitian' was recorded in 1899 in the United States when the dietitian was described as 'a person working in a hospital who provided nutritious meals to patients.' The earliest dietitian were therefore mainly concerned with provision of food and usually trained as home economists. The role of the dietitian has changed drastically in the past 50 years now, and the dietitian is now recognised and accepted as the health advisor in the planning and providing nutritional care for patients requiring therapeutic dietary regimens as well as for the population in general. Today, as health conscious has come to fore, people are visiting dietitians regularly to intake the balanced and healthy diet according to their existing health issues.

Image Source:https://nutrition.rutgers.edu/

Balanced Diet

The food we normally eat in a day is our diet. Our body needs diet in right quantities with all the nutrients for growth and maintenance of good health. Not too much of one and not too little of the other. The diet should also contain a good amount of roughage and water. Such a diet is called a balanced diet. Dietary fibres are also known as roughage. Roughage is mainly provided by plant products in our foods. Whole grains and pulses, potatoes, fresh fruits and vegetables are main sources of roughage. Roughage does not provide any nutrient to our body, but is an essential component of our food and adds to its bulk. This helps our body get rid of undigested food.



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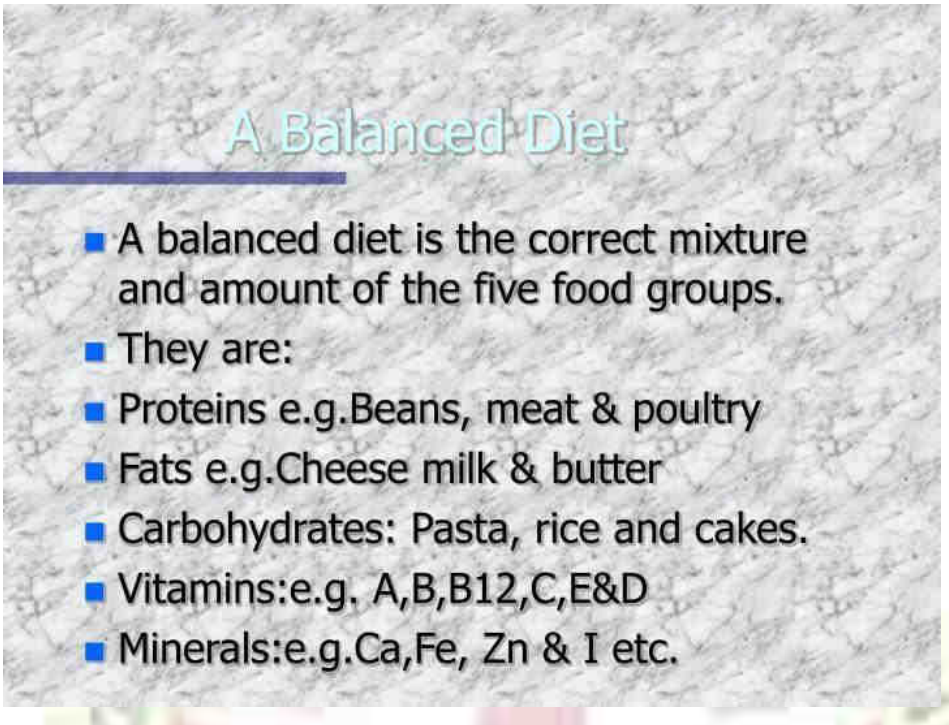

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Malnutrition

Malnutrition is a condition that results from eating a diet which does not supply a healthy amount of one or more nutrients. This includes diets that have too little nutrients or so many that the diet causes health problems. In other words, deficiency of different vitamins and minerals results in malnutrition.

Some diseases/disorders caused by deficiency of vitamins and minerals

Energy (Unit of energy-Joule, Kilocalorie).

Food Energy is measured in large calories or kilocalories equalling 1000 calories, sometimes written capitalized as *Calories*. In the European Union, food energy labelling in joules is mandatory, often with calories as supplementary information. Using the International System of Units, researchers measure energy in joules (J) or in its multiples; the kilojoule (kJ) is most often used for food-related quantities. An older metric system unit of energy, still widely used in food-related contexts, is the calorie; more precisely, the "food calorie", "large calorie" or kilocalorie (kcal or Cal), equal to 4.184 kilojoules.

A kilocalorie is a unit of energy in the International System of Units (SI). The symbol for kilocalorie is kcal. A kilocalorie is also called a "large calorie" or "kilogram calorie".

Food energy is defined as the energy released from carbohydrates, fats, proteins, and other organic compounds. When the three major calorigenic nutrients (carbohydrates, fats, and proteins) in a food are burnt entirely with sufficient amounts of oxygen, it releases energy or food calories that are expressed in kilojoules (kJ) or kilocalories (kcal).

All the other nutrients in food are noncaloric and are thus not counted.

Immunity by food and function of food. Fruits and vegetables provide lots of vitamins and minerals necessary for our body, especially nutrients—like beta-carotene, vitamin C, and vitamin E boost our immune function. Plants producing foods are also rich in antioxidants, that are helpful in daily life.

Antioxidants fruits
1. Prunes
2. Raisins
3. Blueberries
4. Strawberries
5. Raspberries
6. Plums
7. Oranges
8. Grapes
9. Cherries
10. Kiwi

Antioxidants Vegetables
1. Kale
2. Spinach
3. Brussels Sprouts
4. Broccoli Florets
5. Beets
6. Red bell peppers
7. Onions
8. Corn
9. Eggplant
10. Carrots

Vitamins C and E: Vitamins C and E are antioxidants that help to destroy free radicals and enhances the functions of the immune cells. Sources of vitamin C include red peppers, kiwi fruits, oranges, strawberries, broccoli, mangoes, lemons, and other fruits and vegetables. Vitamin E sources include oils, nuts, margarine, avocados, seeds, spinach, and broccoli.

Zinc: Zinc is a mineral that can help boost white blood cells, which defend against invaders. Sources include seafood, meat, poultry, liver, eggs, milks, beans, nuts,and whole grains.

There are different types of Greens that increase the antioxidants levels and the fiber intake to boost our immune system.

Types of Greens
1. Arugula
2. Iceberg
3. Looseleaf
4. Butterhead
5. Chicory and escarole

6. Lamb’s Lettuce
7. Romaine
8. Watercres

Prepare your salad with beta carotene -rich salad greens, like watercress, chicory, and escarole. Apricots are a rich source of beta carotene.

Garlic and onions stimulate the fighting power of macrophages and T cells and boost the immune system. Mushrooms, Yogurt and Kefir improve immune responses against various diseases.

Sleep

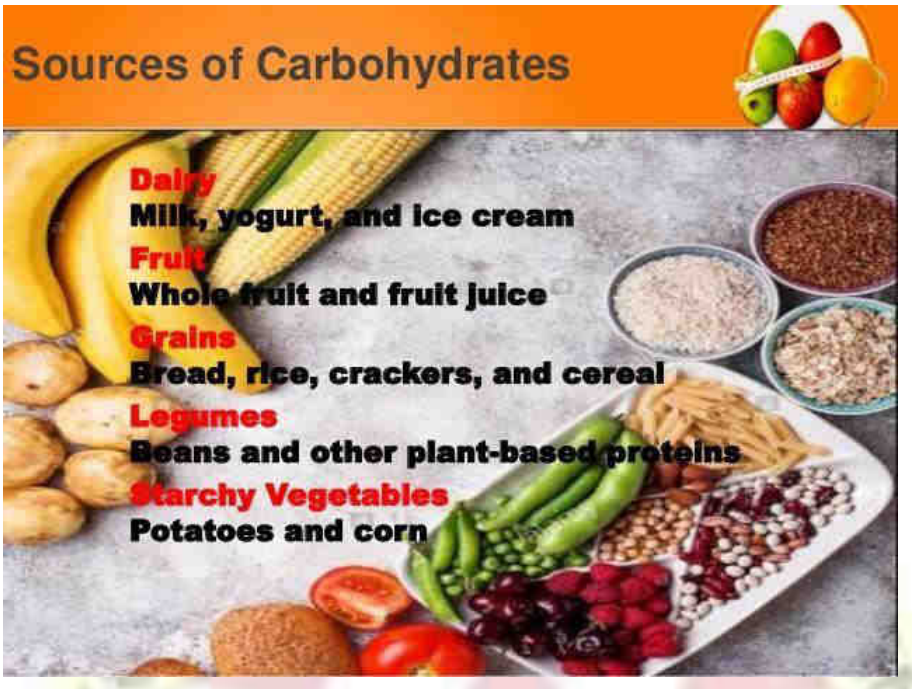
Our bodies need sleep to rest and recharge. Without an adequate amount of sleep, we are prone to various diseases’

UNIT-II Carbohydrate, Protein, Fat, Vitamin and Minerals (Calcium, Phosphorous, Sodium, Potassium, Iron, Iodine, Fluorine) - Sources, Classification, Function, Deficiencies of these nutrients. Function of water and dietary fiber.

Carbohydrate

Carbohydrates mainly provide energy to our body. Foods containing carbohydrates are also called ‘energy giving foods’. There are many types of Carbohydrates. The main carbohydrates found in our food are in the form of starch and sugars. Rice has more carbohydrates than other nutrients. Deficiency of carbohydrates may cause headaches, fatigue, weakness, difficulty in concentration, nausea, constipation, bad breath and the body utilizes proteins and fats for energy. Ketosis occurs in the absence of carbohydrates when glycogen (glucose stores in the liver) is depleted. Regularly consuming fruits, which contain carbohydrates, and starchy vegetables prevent ketosis from occurring

Source Image:https://www.hsph.harvard.edu/



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Proteins

Foods containing proteins are often called ‘body building foods. Proteins are needed for the growth and repair of our body. Proteins are complex and diverse structures built of amino acids. The antibodies that protect us from disease, the enzymes needed for digestion and metabolism and hormones like insulin are all proteins. Protein deficieny causes swelling, fatty liver, skin degeneration, promotes the severity of infections and stunt growth in children. It causes serious diseases such as Kwashiorkor and Marasmic.

Source Image: https://indianexpress.com/

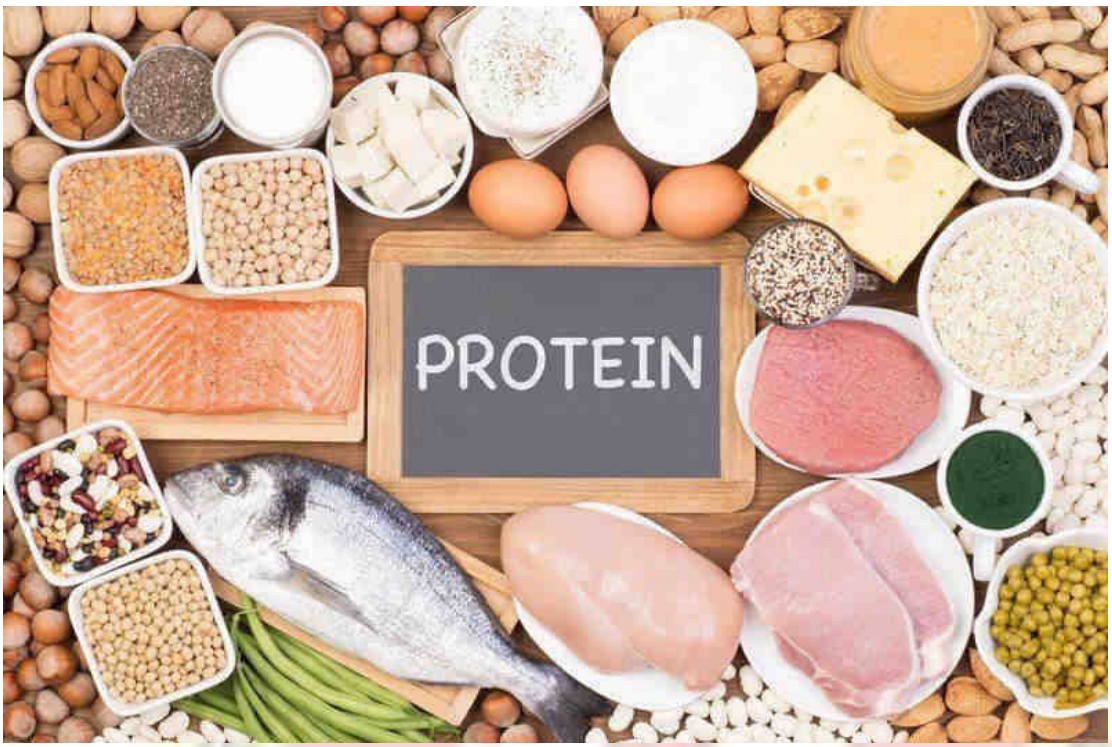


Image Source: https://parkinsonscare.org.uk/

Image Source: https://uonresearch.org/

Vitamins

Vitamins help in protecting our body against diseases. Vitamins also help in keeping our eyes, bones, teeth and gums healthy. Vitamins are of different kinds such as Vitamin A, Vitamin C, Vitamin D, Vitamin E, Vitamin K, Vitamin B-complex. Our body needs all types of vitamins in small quantities. Vitamin A keeps our skin and eyes healthy. Vitamin C helps body to fight against many diseases. Vitamin D helps our body to use calcium for bones and teeth.

Deficiency of vitamins and minerals

Vitamin/Mineral Deficiency disease/disorder Symptoms

Vitamin A causes loss of vision, or poor vision or loss of vision in darkness.

Vitamin B1 causes disease called Beriberi. It causes weak muscles and gives very little energy to work.

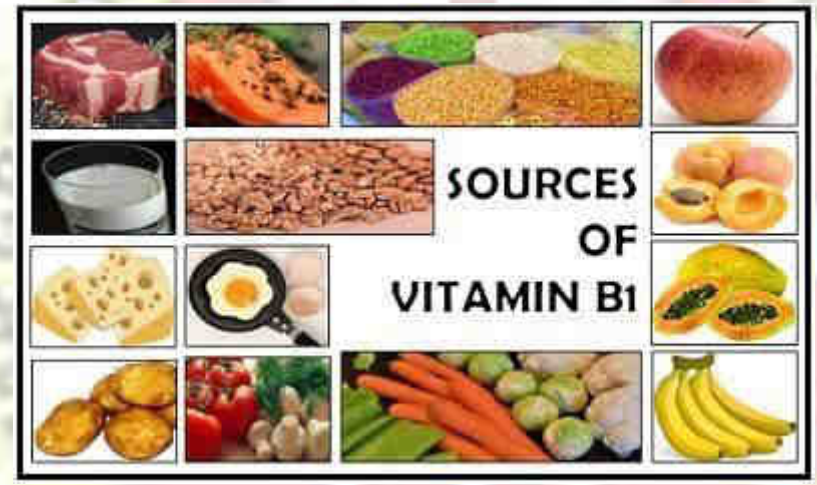


Image Source: https://biologyreader.com/

Vitamin C causes Scurvy and it leads to Bleeding gums.

Image Source: https://www.wcrf-uk.org/

Vitamin D causes Rickets where bones become soft and bent.

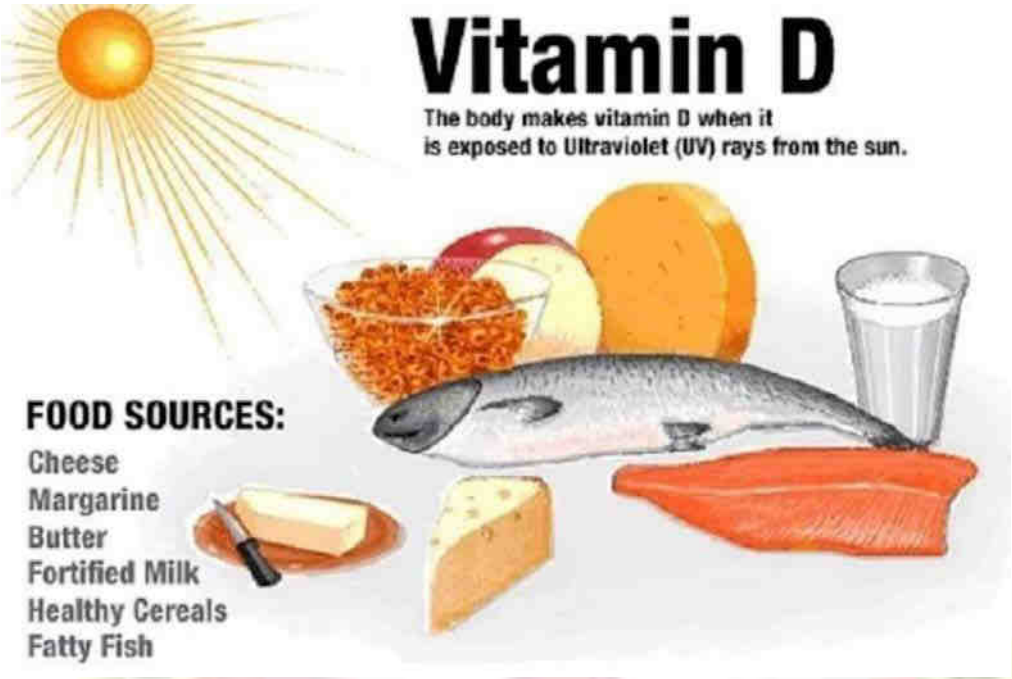


Image Source: https://www.india.com/

Minerals

Deficiencies of minerals lead to a variety of health problems, such as weak bones, fatigue, or a decreased immune system.

Minerals are needed by our body in small amounts. Each one is essential for proper growth of body and to maintain good health. Calcium, Magnesium and Phosphorous are classified as macrominerals because the requirements are much more and they can store in large amounts. Iron, fluoride, manganese, iodine, selenium, zinc, molybdenum, chromium and copper are microminerals because the requirements are much smaller and they are stored in extremely small amounts in the body. Sodium, Potassium, and Chloride are involved in generating electrical impulses to transport nerve messages. They maintain the proper balances of fluid and body chemicals.

Iodine & Iron

Deficiency of Iodine leads to Goitre. It leads to swelling of the glands in the neck and mental disability in children

Deficiency of Iron causes Anaemia which leads to Weakness

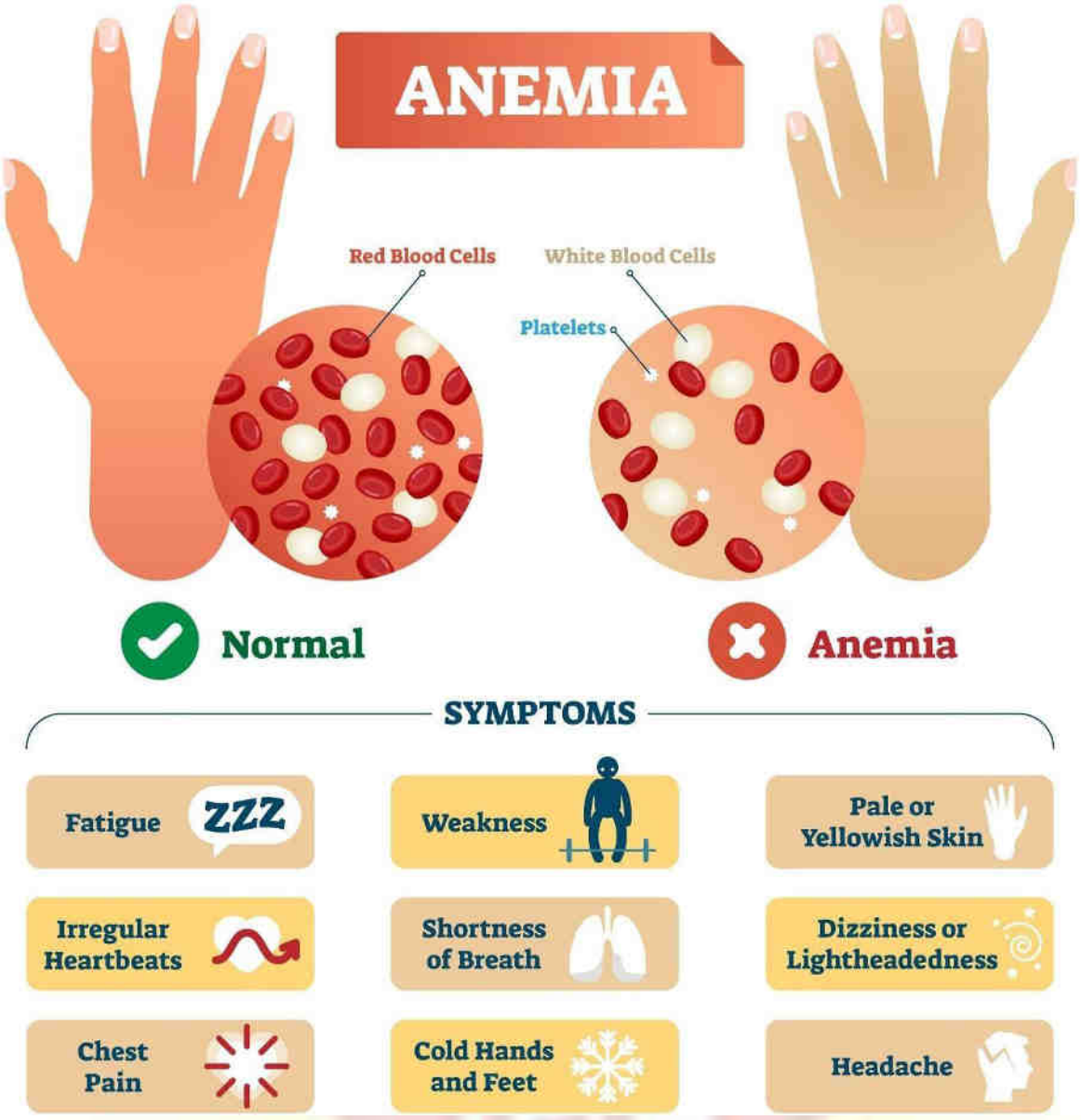


Image Source: https://healthscopemag.com/

It builds strong teeth and bones. It is vital to muscle and nerve function, blood clotting, and metabolism. It helps to regulate blood pressure

Calcium

Calcium deficiency leads to bone and tooth decay.

Phosphorus

It is a micromineral. It helps in maintaining strong bones and teeth. It is a component of enzymes essential for proper metabolism. Deficiency of Phosphorus leads to bone and tooth decay.

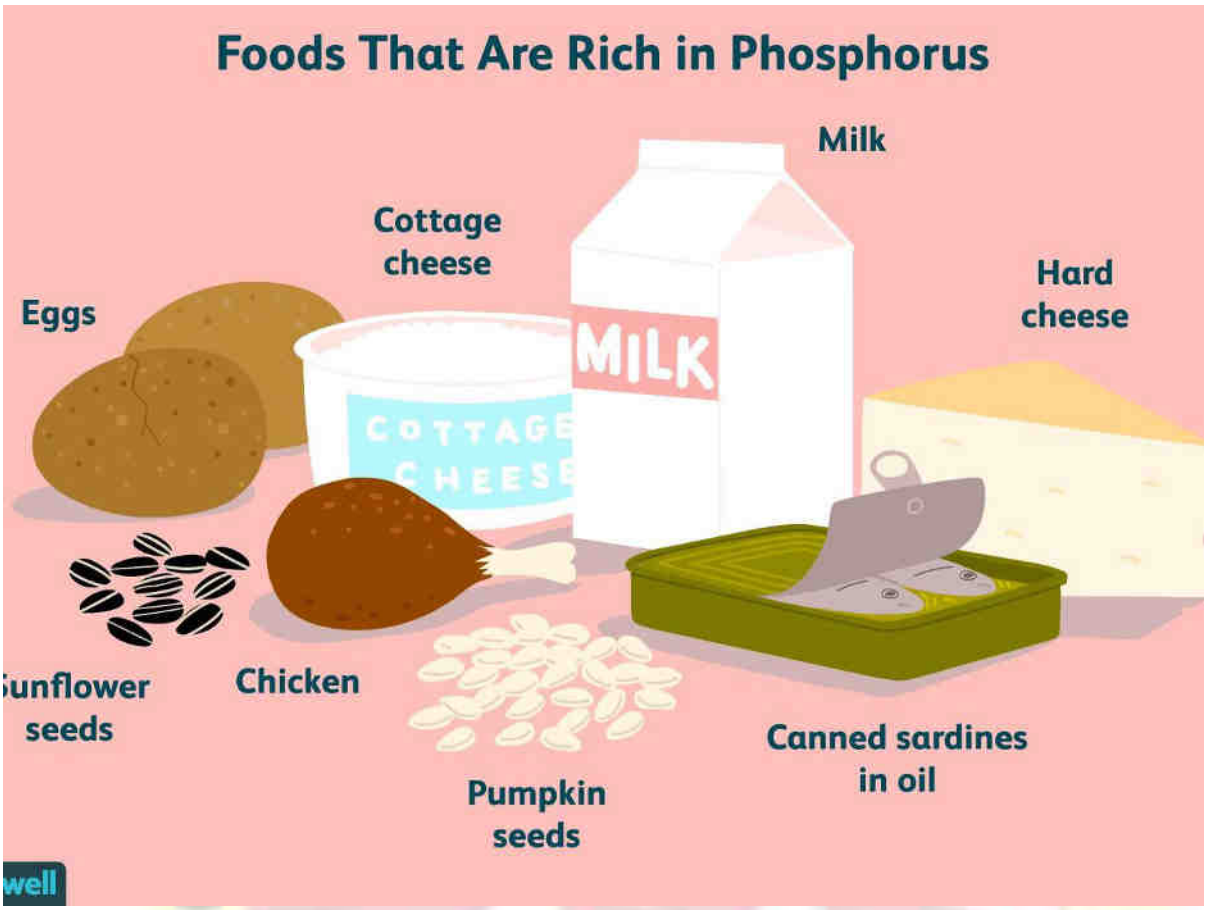


Image Source: https://www.verywellhealth.com/

Sodium

Sodium along with potassium regulates the body's fluid balance and promotes proper muscle function. Sodium is an electrolyte. It maintains the proper balances of fluid and body chemicals.

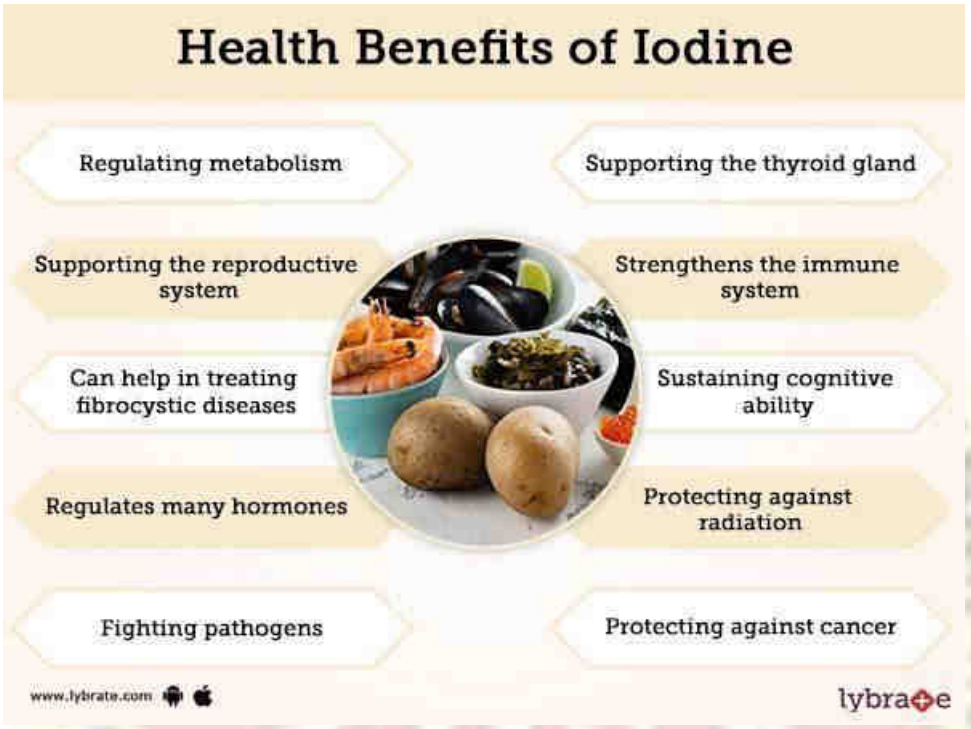
Image source: https://www.boldsky.com/

Iron

Iron produces haemoglobin which transports oxygen throughout the body.

Iodine

Iodine is essential to make thyroid hormones



https://www.lybrate.com/

Fluoride

It helps in maintaining strong bones and teeth.

Image Source: https://slideplayer.com/

Functions of water and dietary fibre.

Our body needs dietary fibres and water. Dietary fibres are also known as roughage. Roughage is mainly provided by plant products in our foods. Whole grains and pulses, potatoes, fresh fruits and vegetables are main sources of roughage. Roughage does not provide any nutrient to our body, but it is an essential component of our food and adds to its bulk. This helps our body get rid of undigested food. Water helps our body to absorb nutrients from food. It also helps in throwing out some wastes from body as urine and sweat. Normally, we get most of the water that our body needs from the liquids we drink —such as water, milk and tea. In addition, we add water to most cooked foods. Let's see if there is any other source which provides water to our body.

Normally, we get most of the water that our body needs from the liquids we drink — such as water, milk and tea. In addition, we add water to most cooked foods. There are many other sources which provides water to our body. If we cut or peel or mash or grate any fresh vegetables or fruits like bottle gourd tomato, lemon, watermelon, into pieces, we can find our hands wet. This indicates that many food materials contain water. To greater extent, our needs are met by this water. Besides this, we also add water while cooking many food items.

UNIT-III BMR: Definition, factors affecting BMR and total energy requirements (Calculation of energy of individuals)

Basal Metabolic Rate

Basal Metabolic Rate can be defined as the minimum amount of energy required by the body to maintain life. Man consumes energy via intake of food.

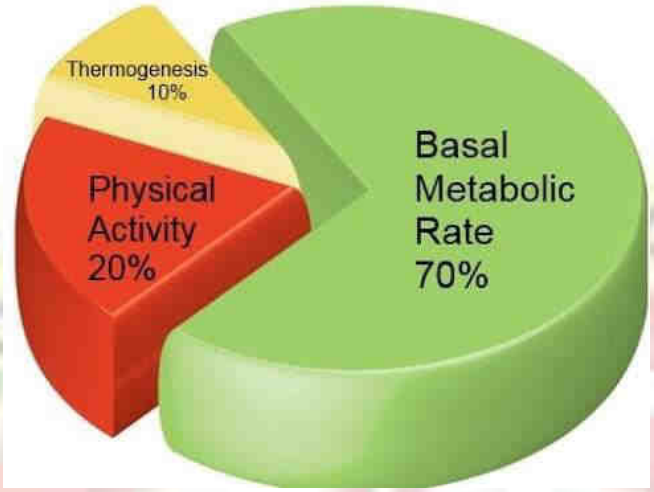


Image Source: https://www.exercise4weightloss.com/

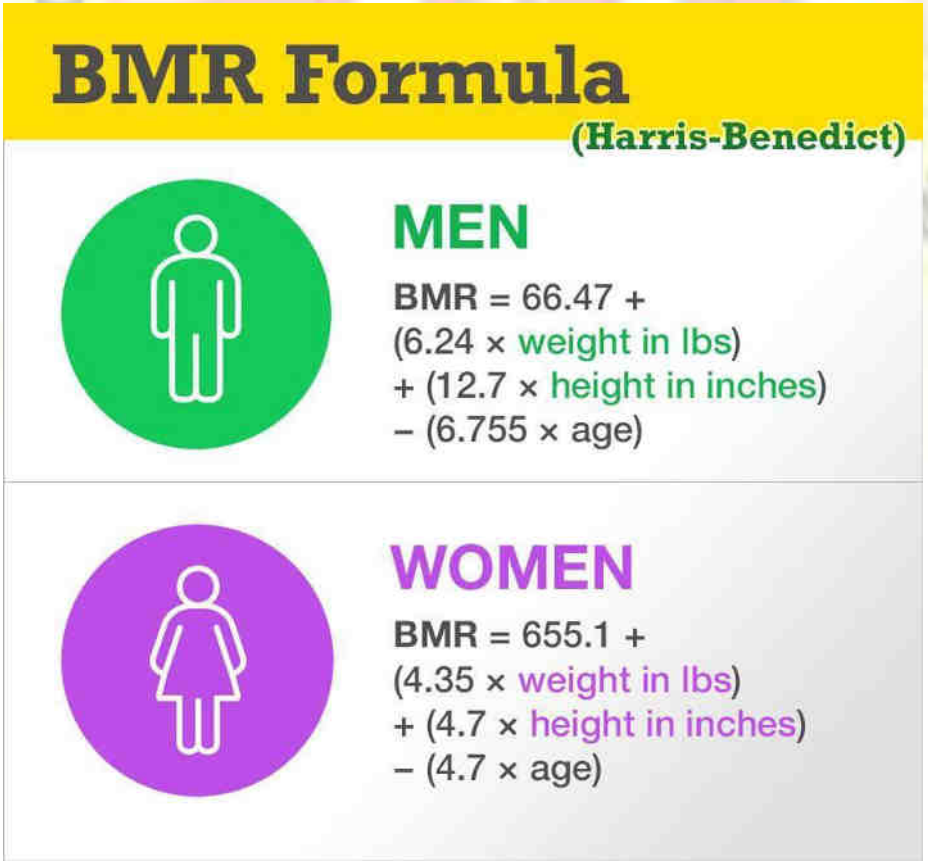


Image Source: https://www.thecalculatorsite.com/

Factors that affect BMR

- Age
- Height
- Growth
- Body
- Composition
- Gender
- Thyroid
- Fever
- Stress
- Environmental temperature
- Fasting/Starvation
- Malnutrition

- BMR is higher in cold climates compared to warm climates.
- It is reported that BMR decreases upto 50%, during starvations and fever increases BMR
- BMR is more in cardiac failure, leukemia, hypertensions and in infections

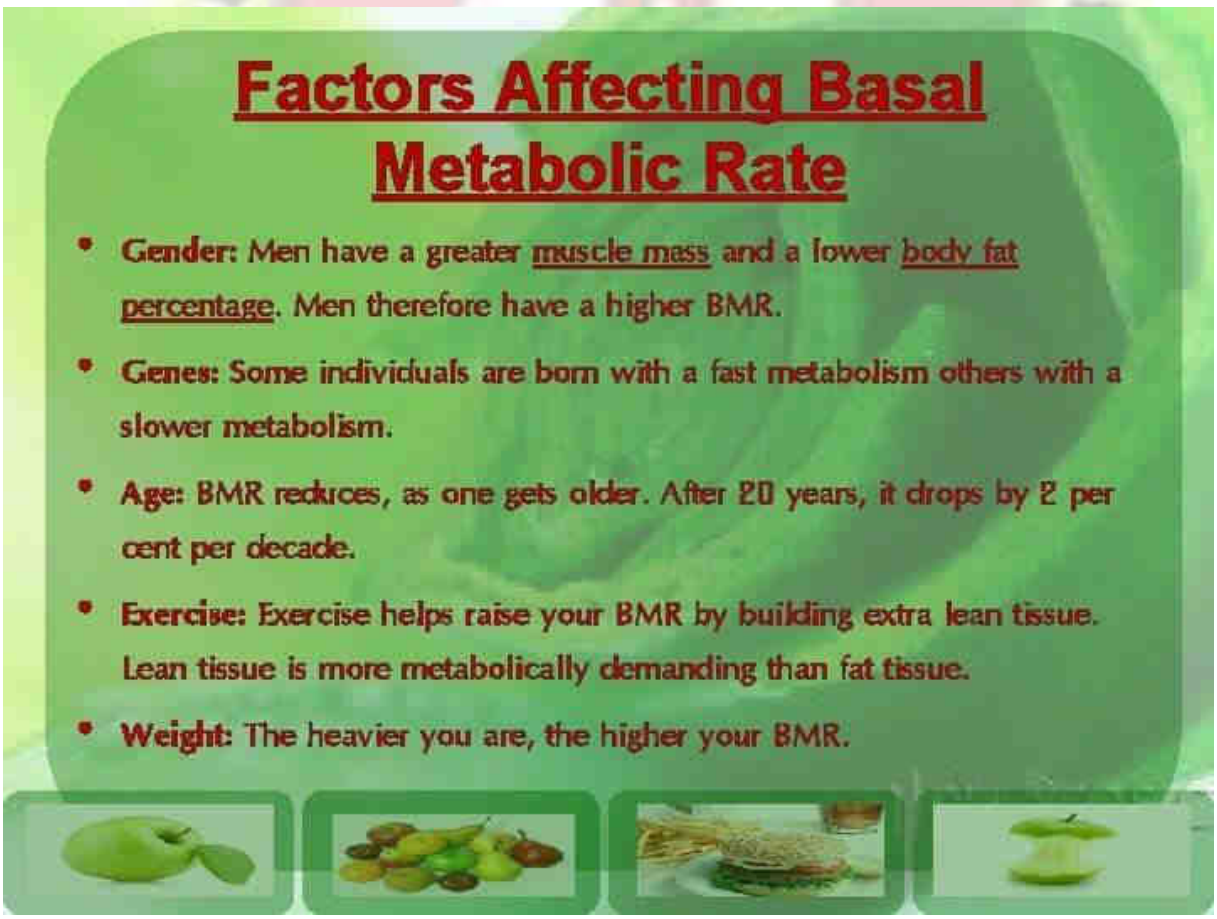


Image Source: https://slidetodoc.com/

UNIT-IV Basic five food groups, nutritional significance of cereals, pulses, milk, meat, fish, vegetables, egg, nuts, oils and sugars. Food toxins, Food additives, Food quality, Safe food handling, Food adulteration, Preservatives and Packaging.

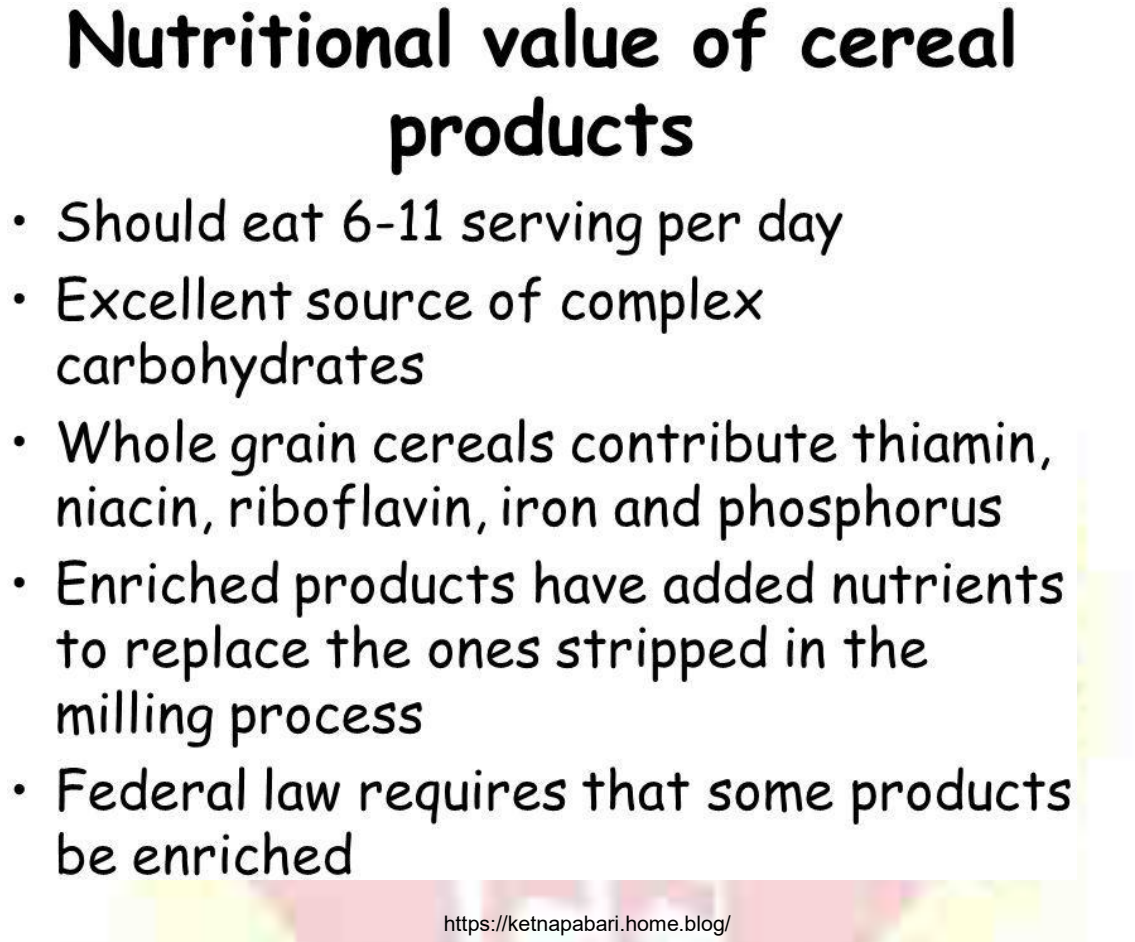
What are the five food groups?

- Fruit and vegetables
- Starchy food
- Dairy
- Protein
- Fat

https://healthandperformancecollective.com/

Nutritional significance of cereals

- Cereals are one of the members of the Carbohydrate, or starch food group.
- Cereals are enriched with various vitamins and minerals especially iron, niacin, thiamine, vitamin B6 and folic acid.
- Oat Cereals are high in soluble fiber that reduces blood cholesterol levels. This in turn reduces the risk of heart disease.



Nutritional significance of pulses

- An excellent source of protein and fibre, vitamins and minerals such as iron, zinc, folate and magnesium.
- Consuming pulses regularly promotes diet quality.

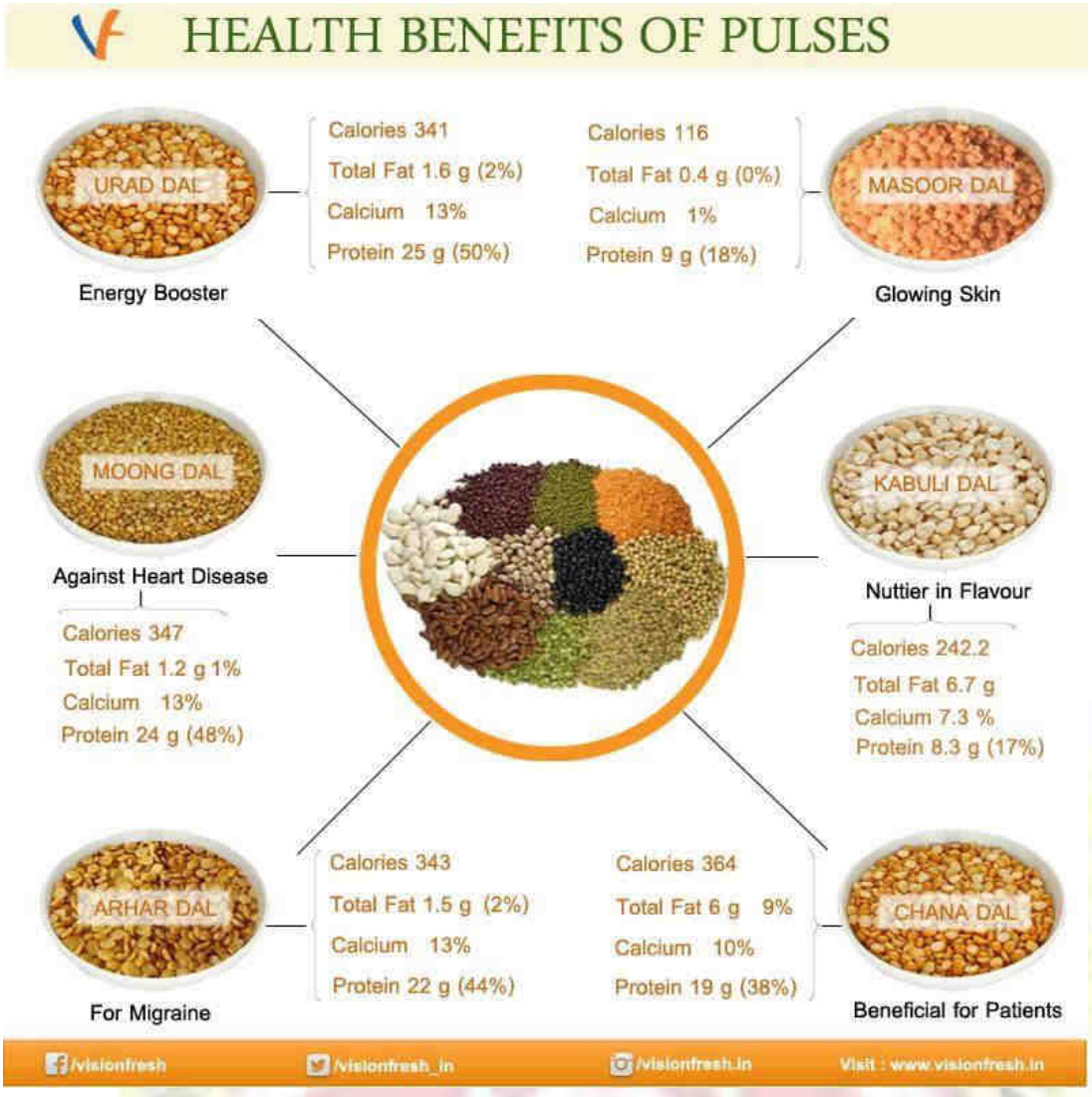


Image Source: https://www.visionfresh.in/

Nutritional significance of milk

- An excellent source of Calcium, Vitamins A, B12 and D, riboflavin, phosphorus, zinc and magnesium.
- Low fat dairy products are low in cholesterol and high in protein

Image Source: https://www.verywellfit.com/

Nutritional significance of meat

- The nutrients in meat strengthen the immune system, contribute to the formation of red blood cells, hormones, and muscle tissue, and ensure proper functioning of the nervous system
- Meat is a major source of nutrients especially vitamin B12, iron, niacin and zinc.
- It gives immunity.

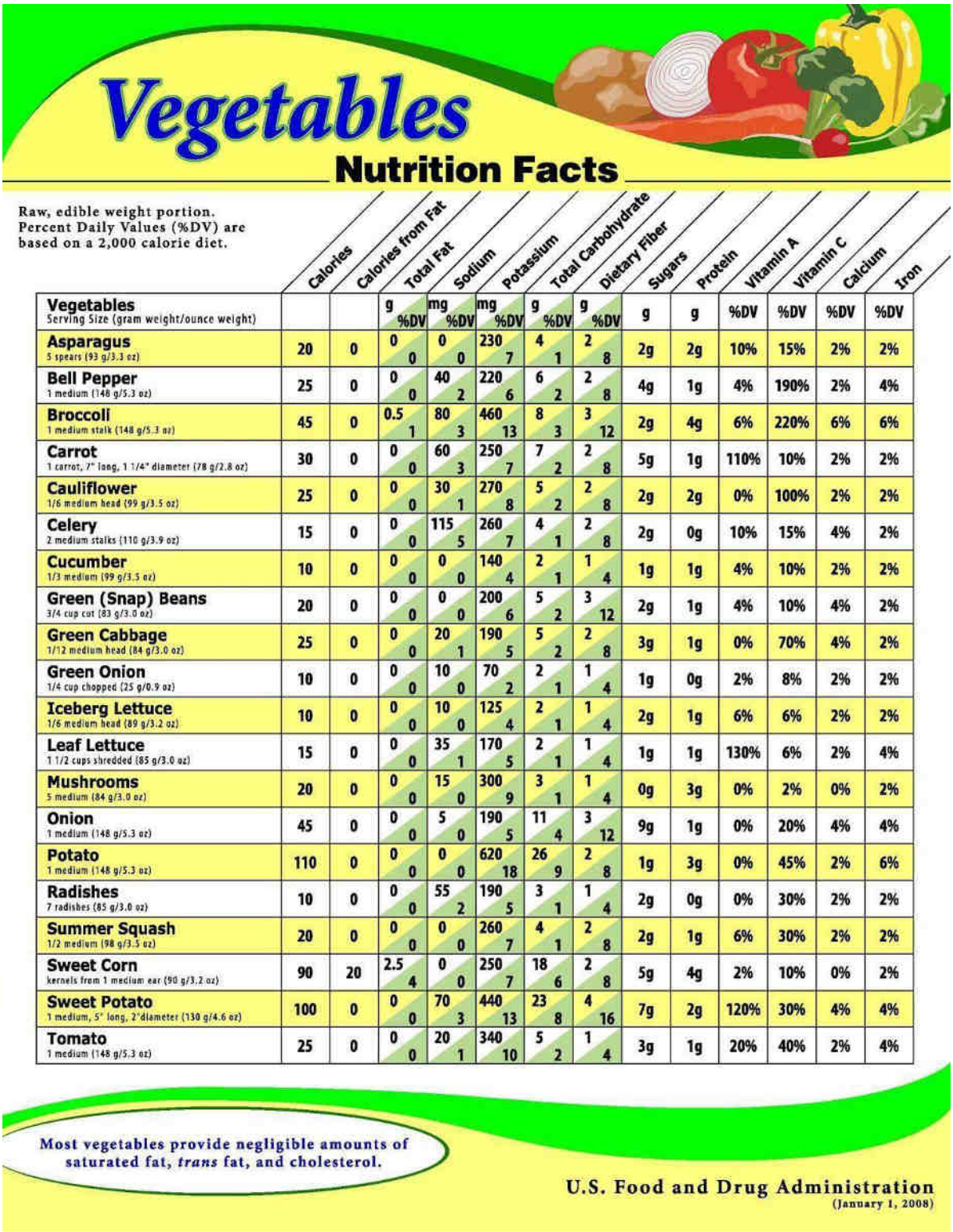
Nutritional Significance of fish

- An excellent source of complete protein, vitamin-A, iron, magnesium and other minerals.
- Contains omega-3 fatty acids which play a role in many processes, including inflammation and other functions of the immune system.
- Eating fish thrice in a week decreases the rate of heart disease.
- It relieves painful symptoms of rheumatoid arthritis

Image Source: https://link.springer.com/

Nutritional significance of vegetables

- Most vegetables are excellent sources of vitamins, fiber, folate, potassium, and minerals.
- They are also rich in phytochemicals that provide protection from disease
- Vegetables are low in fat and usually low in calories.
- Plants produce Vitamin C from sugars formed by photosynthesis process. The larger and darker leaves indicate the presence of more vitamin C and beta carotene.



Vegetables

Nutrition Facts

Raw, edible weight portion.
Percent Daily Values (%DV) are based on a 2,000 calorie diet.

Vegetables Serving Size (gram weight/ounce weight)	Calories	Calories from Fat	Total Fat g %DV	Sodium mg %DV	Potassium mg %DV	Total Carbohydrate g %DV	Dietary Fiber g %DV	Sugars g	Protein g	Vitamin A %DV	Vitamin C %DV	Calcium %DV	Iron %DV
Asparagus 5 spears (93 g/3.3 oz)	20	0	0 0	0 0	230 7	4 1	2 8	2g	2g	10%	15%	2%	2%
Bell Pepper 1 medium (148 g/5.3 oz)	25	0	0 0	40 2	220 6	6 2	2 8	4g	1g	4%	190%	2%	4%
Broccoli 1 medium stalk (148 g/5.3 oz)	45	0	0.5 1	80 3	460 13	8 3	3 12	2g	4g	6%	220%	6%	6%
Carrot 1 carrot, 7" long, 1 1/4" diameter (78 g/2.8 oz)	30	0	0 0	60 3	250 7	7 2	2 8	5g	1g	110%	10%	2%	2%
Cauliflower 1/6 medium head (99 g/3.5 oz)	25	0	0 0	30 1	270 8	5 2	2 8	2g	2g	0%	100%	2%	2%
Celery 2 medium stalks (110 g/3.9 oz)	15	0	0 0	115 5	260 7	4 1	2 8	2g	0g	10%	15%	4%	2%
Cucumber 1/3 medium (99 g/3.5 oz)	10	0	0 0	0 0	140 4	2 1	1 4	1g	1g	4%	10%	2%	2%
Green (Snap) Beans 3/4 cup cut (83 g/3.0 oz)	20	0	0 0	0 0	200 6	5 2	3 12	2g	1g	4%	10%	4%	2%
Green Cabbage 1/12 medium head (84 g/3.0 oz)	25	0	0 0	20 1	190 5	5 2	2 8	3g	1g	0%	70%	4%	2%
Green Onion 1/4 cup chopped (25 g/0.9 oz)	10	0	0 0	10 0	70 2	2 1	1 4	1g	0g	2%	8%	2%	2%
Iceberg Lettuce 1/6 medium head (89 g/3.2 oz)	10	0	0 0	10 0	125 4	2 1	1 4	2g	1g	6%	6%	2%	2%
Leaf Lettuce 1 1/2 cups shredded (85 g/3.0 oz)	15	0	0 0	35 1	170 5	2 1	1 4	1g	1g	130%	6%	2%	4%
Mushrooms 5 medium (84 g/3.0 oz)	20	0	0 0	15 0	300 9	3 1	1 4	0g	3g	0%	2%	0%	2%
Onion 1 medium (148 g/5.3 oz)	45	0	0 0	5 0	190 5	11 4	3 12	9g	1g	0%	20%	4%	4%
Potato 1 medium (148 g/5.3 oz)	110	0	0 0	0 0	620 18	26 9	2 8	1g	3g	0%	45%	2%	6%
Radishes 7 radishes (85 g/3.0 oz)	10	0	0 0	55 2	190 5	3 1	1 4	2g	0g	0%	30%	2%	2%
Summer Squash 1/2 medium (98 g/3.5 oz)	20	0	0 0	0 0	260 7	4 1	2 8	2g	1g	6%	30%	2%	2%
Sweet Corn kernels from 1 medium ear (90 g/3.2 oz)	90	20	2.5 4	0 0	250 7	18 6	2 8	5g	4g	2%	10%	0%	2%
Sweet Potato 1 medium, 5" long, 2" diameter (130 g/4.6 oz)	100	0	0 0	70 3	440 13	23 8	4 16	7g	2g	120%	30%	4%	4%
Tomato 1 medium (148 g/5.3 oz)	25	0	0 0	20 1	340 10	5 2	1 4	3g	1g	20%	40%	2%	4%

Most vegetables provide negligible amounts of saturated fat, *trans* fat, and cholesterol.

U.S. Food and Drug Administration
(January 1, 2008)

Image Source: https://www.pinterest.com/

Nutritional significance of egg

- Eggs contain amino acids.
- An excellent source of protein, B vitamins, vitamins A and D, zinc, and iron
- Vitamin B12 is essential for proper nerve function.
- Eggs are a good source of the anti-oxidants.

Image Source: https://www.shutterstock.com/

Nutritional significance of nuts

- Nuts are a rich source of vitamins especially folate, B vitamins, and vitamins E, minerals such as iron, calcium, selenium, magnesium, manganese, phosphorus, zinc and potassium.
- Certain nuts are higher in certain nutrients. A half-cup of almonds, pine nuts, pistachios, sunflower seeds, peanuts provides more than 500 mg of potassium.
- Some nuts are rich in vitamin-E , an important antioxidant that enhances the immune system.

Image Source: https://www.lybrate.com/

Nutritional significance of oils

- Oils provide essential fatty acids needed for hormone production

- They are the source of concentrated energy and nutrients.
- Improve the texture and flavor of food.

Flax Seeds Are A Top Source of Nutrition for a High Fiber Diet

Flax Seeds Nutritional Value

Heart – Healing Omega 3 & Omega 6(Essential Fatty Acids)

Source	Omega 3	Omega 6
	48%	19%
Flax Seed	7%	54%
Soybean	15%	42%
Pumpkin	9%	51%
Walnut	0%	75%
Safflower	0%	65%
Sunflower	0%	59%
Corn		

Colon Cleansing Fiber Source (1 cup)	Grams
Flaxseed	44.0
40% Bran	6.4
Total Cereal	2.0
Pasta Spaghetti	1.1
Black Beans	7.2
Lentils	7.4
Chickpeas	14.0
Rice Brown	2.0
Rice White	0.2
Raspberries	6.2
Kiwi	3.1
Broccoli	4.6
Corn	7.8

Image Source: https://freshflaxseeds.com/

Nutritional significance of sugars

- Sugars are an important source of energy containing glucose.
- The brain requires around 130 grams of sugar per day to keep functioning.
- Glucose is found in fruits, vegetables and honey.

Food toxins

Number of diseases can spread through contaminated food. Food is contaminated either through bacteria or virus. Bacterial infection are invisible, so one cannot rely on sight or taste to detect them. Bacteria can cause disease either through their rapid multiplication inside the body or through toxins that they may produce. Most cases of food poisoning are caused by bacterial contamination, usually traceable faulty handling or preparation of the food. The microorganisms that are most often responsible are Clostridium botulinum, Clostridium perfringens, Escherichia coli, Listeria monocytogenes.

Food additives

- Food additives are chemicals that are added to food to keep food fresh or to enhance the colour, flavour, and texture of the food.

- This includes food colourings, preservatives, and flavour enhancers.

TYPES OF FOOD ADDITIVE

- Additives described as generally Recognized as Safe (GRAS), mean that they have been used for many years without any know adverse efforts, for example, salt, sugar and vinegar.
- Colours (natural colours, natural identical colours, synthetic colours)
- Flavours
- Emulsifiers
- Gelling agents
- Preservatives
- Sweeteners
- Ant caking agents
- Antioxidants
- Acidulants

Image Source: https://www.learnpick.in/

Food quality and safe food handling

Food safety

1

- Food safety is defined as **protection of consumer from adverse health effects of food under the responsibility and control of legislation**

- In terms of food safety, legislations are responsible to
  - **Control of food hygiene** during production and distribution
  - **Limit the levels of food additives**
  - **Limit the levels of food contaminants** which can be naturally found or occured as a result of heat treatment
  - **Approve new unit operations**
  - **Determine specifications for packaging materials**

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Image Source: https://slideplayer.com/

Parameters threatening the food safety

2

The parameters which threaten the food safety are given below

□**Natural toxins:** They are generally plant origin. They cause poisoning. Some mushrooms species, some herbal teas, some types of honey can be considered as an example for natural toxins in foods

□**Allergens:** Food allergies cause negative impact on immune system, which is originated from specific food proteins. Food allergies generally attributed to milk, eggs, peanuts, tree nuts, soy, wheat, fish and shellfish

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Image Source: https://slideplayer.com/

Food adulteration

Food Adulteration can be defined as the practice of adulterating food or contaminating food materials by adding a few substances, which are collectively called adulterants.

Adulterants are the substance or poor quality products added to food items for economic and technical benefits. Addition of these products devours the nutrients present in the food and also contaminates the food. These adulterants can be available in all food products which we consume daily, including dairy products, cereals, pulses, grains, meat, vegetables, fruits, oils, beverages, etc.

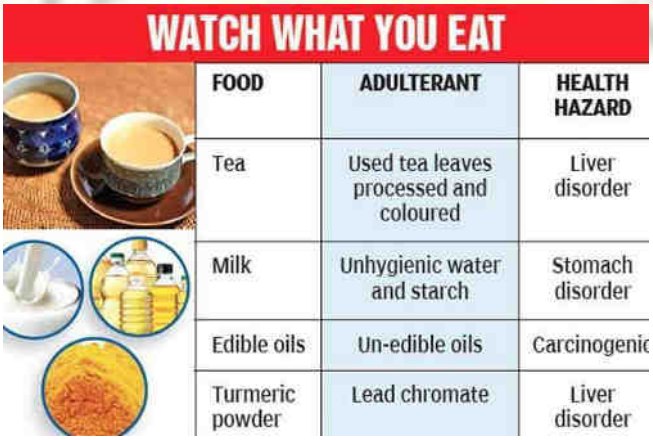


Image Source: https://www.dtnext.in/

Preservatives and Packaging.

Food packaging is packaging of food with utmost care to avoid tampering.

Different types of Additives added to preserve food.

Benzoic acid and benzoates are used as preservatives in soft drinks, beer, fruit products, margarine and acidic foods.

Nitrites and nitrates are preservatives found in processed meats, such as sausages, hot dogs, bacon, smoked fish and lunch meats.

Sulfites are used as preservatives in dried fruits, shredded coconut, fruit-based pie fillings and relishers.

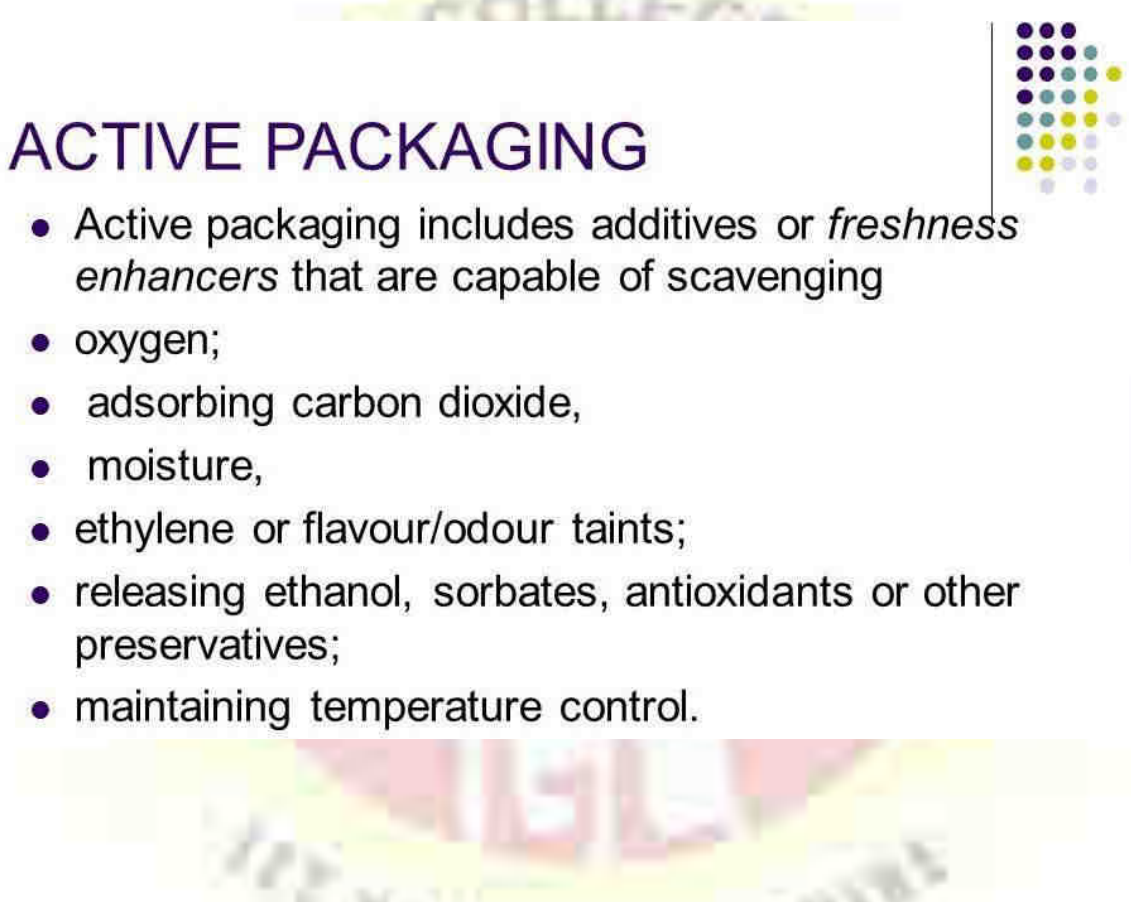
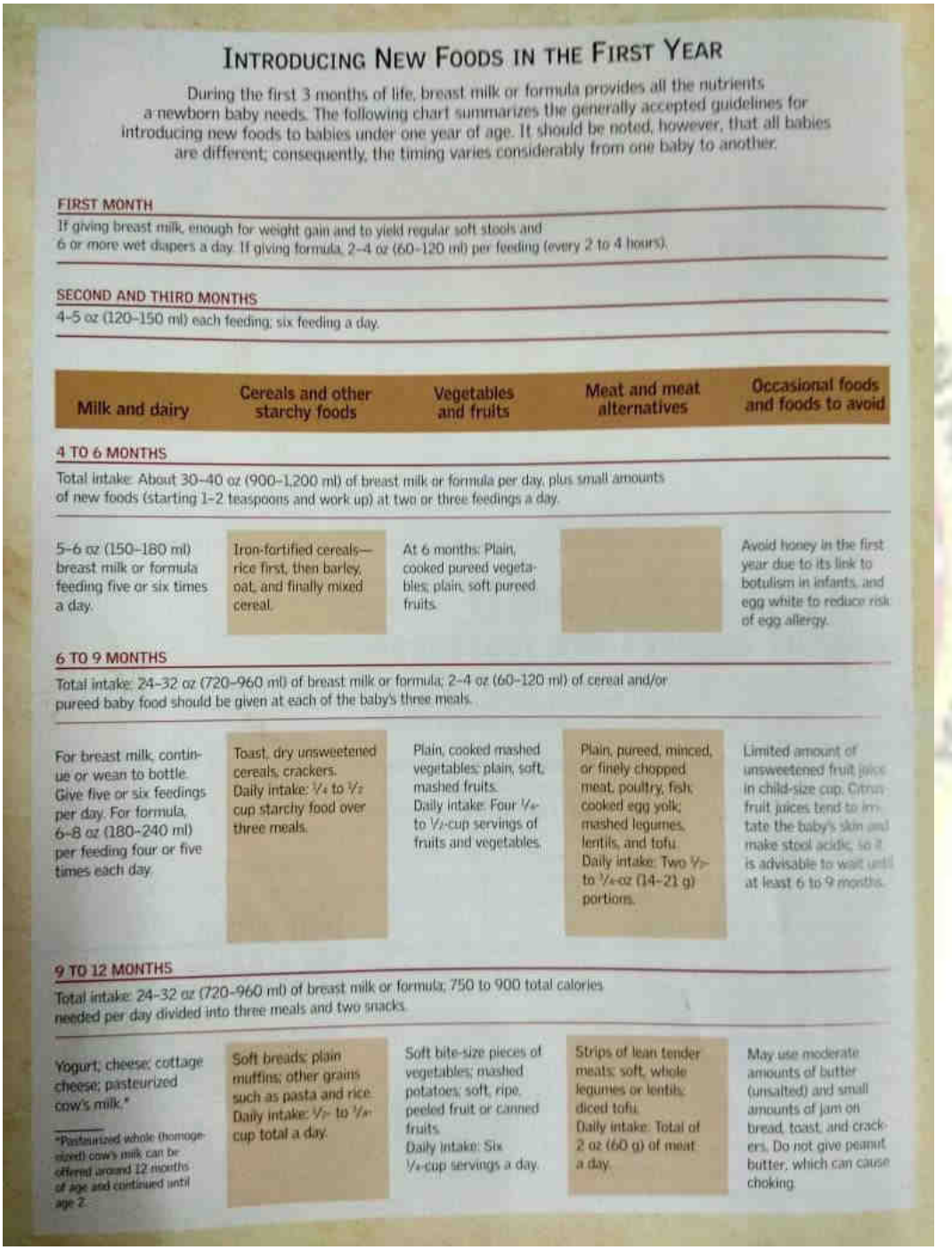


Image Source: https://slideplayer.com/

UNIT-V Principles and Objectives of meal planning. Diet for an infant, preschool child, School child, normal male and female of different occupations.

https://www.preservearticles.com/

Diet for an infant



Introducing New Foods in the First Year

During the first 3 months of life, breast milk or formula provides all the nutrients a newborn baby needs. The following chart summarizes the generally accepted guidelines for introducing new foods to babies under one year of age. It should be noted, however, that all babies are different; consequently, the timing varies considerably from one baby to another.

FIRST MONTH

If giving breast milk, enough for weight gain and to yield regular soft stools and 6 or more wet diapers a day. If giving formula, 2–4 oz (60–120 ml) per feeding (every 2 to 4 hours).

SECOND AND THIRD MONTHS

4–5 oz (120–150 ml) each feeding; six feeding a day.

Milk and dairy	Cereals and other starchy foods	Vegetables and fruits	Meat and meat alternatives	Occasional foods and foods to avoid
4 TO 6 MONTHS				
Total intake: About 30–40 oz (900–1,200 ml) of breast milk or formula per day, plus small amounts of new foods (starting 1–2 teaspoons and work up) at two or three feedings a day.				
5–6 oz (150–180 ml) breast milk or formula feeding five or six times a day.	Iron-fortified cereals—rice first, then barley, oat, and finally mixed cereal.	At 6 months: Plain, cooked pureed vegetables; plain, soft pureed fruits.		Avoid honey in the first year due to its link to botulism in infants, and egg white to reduce risk of egg allergy.
6 TO 9 MONTHS				
Total intake: 24–32 oz (720–960 ml) of breast milk or formula; 2–4 oz (60–120 ml) of cereal and/or pureed baby food should be given at each of the baby's three meals.				
For breast milk, continue or wean to bottle. Give five or six feedings per day. For formula, 6–8 oz (180–240 ml) per feeding four or five times each day.	Toast, dry unsweetened cereals, crackers. Daily intake: ¼ to ½ cup starchy food over three meals.	Plain, cooked mashed vegetables; plain, soft, mashed fruits. Daily intake: Four ¼- to ½-cup servings of fruits and vegetables.	Plain, pureed, minced, or finely chopped meat, poultry, fish; cooked egg yolk; mashed legumes, lentils, and tofu. Daily intake: Two ½- to ¾-oz (14–21 g) portions.	Limited amount of unsweetened fruit juice in child-size cup. Citrus fruit juices tend to irritate the baby's skin and make stool acidic, so it is advisable to wait until at least 6 to 9 months.
9 TO 12 MONTHS				
Total intake: 24–32 oz (720–960 ml) of breast milk or formula; 750 to 900 total calories needed per day divided into three meals and two snacks.				
Yogurt; cheese; cottage cheese; pasteurized cow's milk.* *Pasteurized whole (homogenized) cow's milk can be offered around 12 months of age and continued until age 2.	Soft breads; plain muffins; other grains such as pasta and rice. Daily intake: ½- to ¾-cup total a day.	Soft bite-size pieces of vegetables; mashed potatoes; soft, ripe, peeled fruit or canned fruits. Daily intake: Six ¼-cup servings a day.	Strips of lean tender meats; soft, whole legumes or lentils; diced tofu. Daily intake: Total of 2 oz (60 g) of meat a day.	May use moderate amounts of butter (unsalted) and small amounts of jam on bread, toast, and crackers. Do not give peanut butter, which can cause choking.

Source-*Foods that harm, foods that heal*/Reader's Digest

Diet for preschool child, School child, normal male and female of different occupations.

FOOD FOR GROWING UP

As children grow, their nutritional needs change; some needs vary between the sexes. The chart below gives an overview of the Recommended Dietary Allowances (RDAs) of certain nutrients for children from ages 1 to 18.

AGES		1–3	4–8	9–13	14–18
VITAMIN A (mcg)	Boys	300	400	600	900
	Girls	300	400	600	700
VITAMIN D (mcg)		5*	5*	5*	5*
VITAMIN E (mg)		6	7	11	15
VITAMIN C (mg)		15	25	45	65–75
NIACIN (mg)	Boys	6	8	12	16
	Girls	6	8	12	14
THIAMINE (mg)	Boys	0.5	0.6	0.9	1.2
	Girls	0.5	0.6	0.9	1.0
RIBOFLAVIN (mg)	Boys	0.5	0.6	0.9	1.3
	Girls	0.5	0.6	0.9	1.0
FOLATE (mcg)		150	200	300	400
VITAMIN B_6 (mg)	Boys	0.5	0.6	1.0	1.3
	Girls	0.5	0.6	1.0	1.2
VITAMIN B_{12} (mcg)		0.9	1.2	1.8	2.4
CALCIUM (mg)		500*	800*	1,300*	1,300*
IRON (mg)	Boys	7	10	8	11
	Girls	7	10	8	15
ZINC (mg)	Boys	3	5	8	11
	Girls	3	5	8	9

Asterisks (*) represent daily Adequate Intake (AI). The term Adequate Intake is used rather than RDA when scientific evidence is insufficient to estimate an average requirement.

Source-*Foods that harm, foods that heal*/Reader's Digest