

# NUTRITION

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# OBJECTIVES

- At the end of this unit, participants will be able to:
- Define Food, Nutrition, Diet and Malnutrition
- Understand best practices and harmful practices, which affect nutrition,
- Explain the dietary guidelines, Outline the important causes of malnutrition,

# FOOD

- Food: - is defined as any solid or liquid which when ingested will enable the body to carry out any of its life function.
- Most foods are made up of several simple substances, which we call nutrients.

# NUTRIENTS

There are six nutrients each of which has specific function in the body.

- Those that supply energy are the carbohydrates and fats.
- Those responsible for growth and repair of tissues cells are proteins. Proteins may also be converted to energy during starvation.
- Those, which regulate chemical process in the body, are the vitamins and minerals.
- Water is present in most foods and is an indispensable component of our bodies.

# NUTRITION DEFINITION

- Nutrition: - is the sum total of the process by which living things receive and utilize the necessary materials for survival, growth and maintenance of worn out tissues.
- Malnutrition: - is the condition that results from an imbalance between dietary intake and requirements. It includes under nutrition, which results from less food intake and hard physical work and over nutrition results from excess food intake and less physical activities.
- Diet: - is defined as food containing all the nutrients in a sufficient amount and in proper ratio

# ROUGHAGE

- Roughage: - is defined as food fibres which enable the body to get rid of waste products, which would otherwise become poisonous to the body. It prevents gastrointestinal disorders (gastritis, appendicitis, gallbladder stone and constipation).

# DIETARY GUIDELINES

- Eat a wide variety of foods
- Maintain healthy weight
- Choose a diet low in fat, saturated fat, and cholesterol
- Choose a diet with plenty of vegetables, fruits and wholegrain products
- Use sugar in moderation
- Use salt in moderation
- If you drink alcohol do so in moderation or STOP.

# MAJOR CAUSES OF MALNUTRITION

- Lack of knowledge in selecting foodstuff with high nutritive value
- Poverty and infectious diseases
- Drought Uneven distribution of the available foods.
- Social unrest and civil conflicts,.
- Transport problems (inaccessibility)



# SPECIAL NEEDS

- Good nutrition must meet the needs of varying ages and activities.
- These are:
  - Pregnant women
  - Nursing mothers
  - Infants
  - Adolescents and
  - Adults A well-nourished

# ADVANTAGES OF GOOD NUTRITION

- A well-nourished individual:- Is alert mentally and physically fit.
- Has optimistic outlook on life
- Has good resistance to infection

# DAILY CALORIE REQUIREMENTS

- Infants 1 - 3 years need 1,000 cal/day
  - Children 5 years need 1,500 cal/day
  - Children 5 – 8 years need 1,800 cal/day
  - Children 10 – 12 years need 2,000 cal/day
- For adolescents and adults calorie requirements depend on the degree of physical activities

# Calorie requirements

- From 13 – 20 years of age Office worker Heavy work 2, 800 cal/day 3,500 cal/day Adults 2,300-cal/day 2,700 cal/day Very heavy work up to 4,000 cal/day For pregnant woman, the daily figure must be increased by 150 calories for the first trimester and 350 for the second and third trimester. For the nursing mother the daily figure must be increased by 800 calorie. Staple foods Staple foods are foods, which form the largest part of a nation's diet.

# VITAMINS

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# VITAMIN A

- **Food sources include:** Cod-liver oil, sweet potatoes ( very high), carrots, leafy vegetables, and fortified foods such as breakfast cereals
- **What it does:** Promotes good eyesight and normal functioning of the immune system, bone metabolism.  
Deficiency: Irreversible blindness.

# Vitamins B group

- **Vitamin B<sub>1</sub> (Thiamine)**
- **Vitamin B<sub>2</sub> (Riboflavin)**
- **Vitamin B<sub>3</sub> or Vitamin P or Vitamin PP (Niacin)**
- **Vitamin B<sub>5</sub> (Pantothenic acid)**
- **Vitamin B<sub>6</sub> (Pyridoxine and Pyridoxamine)**
- **Vitamin B<sub>7</sub> or Vitamin H (Biotin)**
- **Vitamin B<sub>9</sub> or Vitamin M and Vitamin B-c (Folic acid)**
- **Vitamin B<sub>12</sub> (Cyanocobalamin)**

# Vitamin B1 (Thiamine)

- **Food sources include:** Enriched, fortified, or whole-grain products such as bread, pasta, and cereals
- **What it does:** Helps the body process carbohydrates and some protein



# Deficiency

➤ **Beriberi**: The syndrome typically causes poor appetite, abdominal [pain](#), heart enlargement, [constipation](#), weakness, swelling of limbs, muscle spasms, [insomnia](#), and [memory loss](#) (all reversed on treatment).

➤ **Wernicke-Korsakoff syndrome**: Resulted from untreated Beriberi and characterized by confusion, disorientation, inability to speak, numbness or tingling of extremities, edema, nausea, vomiting, visual difficulties, and may progress to psychosis, coma, and death. Even in advanced states, this condition can be reversible if B<sub>1</sub> is given.

## **Risk Factors for Deficiency**

- The leading risk factor for thiamine deficiency is alcoholism. Alcohol acts directly to destroy thiamine and increases its excretion.
- Liver cirrhosis, malabsorption syndromes, diabetes, kidney disease, or hypermetabolic conditions also have increased susceptibility to B<sub>1</sub> deficiency.
- The elderly peoples with poor nutritional status and difficulties with absorption.
- Others with nutritionally inadequate diets, or an increased need as a result of stress, illness, or surgery may benefit from additional vitamin B<sub>1</sub> intake.

# Vitamin B2 (Riboflavin)

- **Food sources include:** Milk, breads, fortified cereals, chicken, and cooked beef
- **What it does:** Supports many body processes, such as turning food into energy. It also helps the body make red blood cells.

# Ariboflavinosis

**Symptoms of riboflavin deficiency:**

- **Cracked and red lips.**
- **Inflammation of the lining of mouth and tongue.**
- **Mouth ulcers, angular cheilitis.**
- **Dry and scaling skin and iron-deficiency anemia.**
- **The eyes become bloodshot, itchy and sensitive to bright light.**

**Angular cheilitis:** is an inflammatory lesion at the corner of the mouth. Usually associated with a fungal (*Candidal*) or bacterial (*Staphylococcal*) infection. The condition manifests as deep cracks or splits. In severe cases, the splits can bleed when the mouth is opened.

# Vitamin B3

- **Vitamin B3 (Niacin)**
- **Food sources include:** Poultry, fish, meat, whole grains, and fortified cereals
- **What it does:** Helps with digestion and changing food into energy; helps make cholesterol.

# Vitamin B6 (Pyridoxine)

- **Vitamin B6**
- **Food sources include:** Fortified cereals, Wheat, baked potatoes with skin, bananas, light-meat chicken and turkey, eggs, and spinach
- **What it does:** Supports your nervous system. Helps the body break down proteins and stored sugar.

# Vitamin B6 deficiency

- Convulsions
- Hyperirritability
- Nerve damage leading to burning sensation of extremities eg. feet

# Vitamin E deficiency

- **Severe vitamin E deficiency causes:**

- ▣ Neurological symptoms (impaired coordination) & muscle weakness.

- ▣ Increased risk of cardiovascular diseases

- ▣ Hemolytic anemia in children



# Folate (Folic acid)

- Source: Leafy green vegetables
- Action: Acts as a coenzyme. Helps in blood and nervous tissue formation
- Deficiency: Spinal cord defects in foetus, Low blood formation leading to anaemia

# Vitamin B12 Cyanocobalamin

- Source: Liver, meat, eggs, milk
- Action: Coenzyme in amino acid formation and formation of blood.
- Deficiency: Pernicious anaemia, reduced function of stomach and intestines.

# Vitamin C

- Sources: Citrus fruits, Leafy green vegetables
- Caution: Vitamin C is destroyed by heat.
- Deficiency: Scurvy.

# Vitamin D

- Sources: Manufactured by the body using sunshine. Fish liver.
- Activity: Intestinal absorption of calcium and phosphates
- Deficiency: Weak bones - Rickets

# Vitamin K

- Source: Green leafy vegetables
- Activity: Helps in blood clotting.
- Deficiency: Bleeding

Vitamin M - money

# FOODS THAT BOOSTS MEMORY

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# FOODS THAT BOOSTS MEMORY





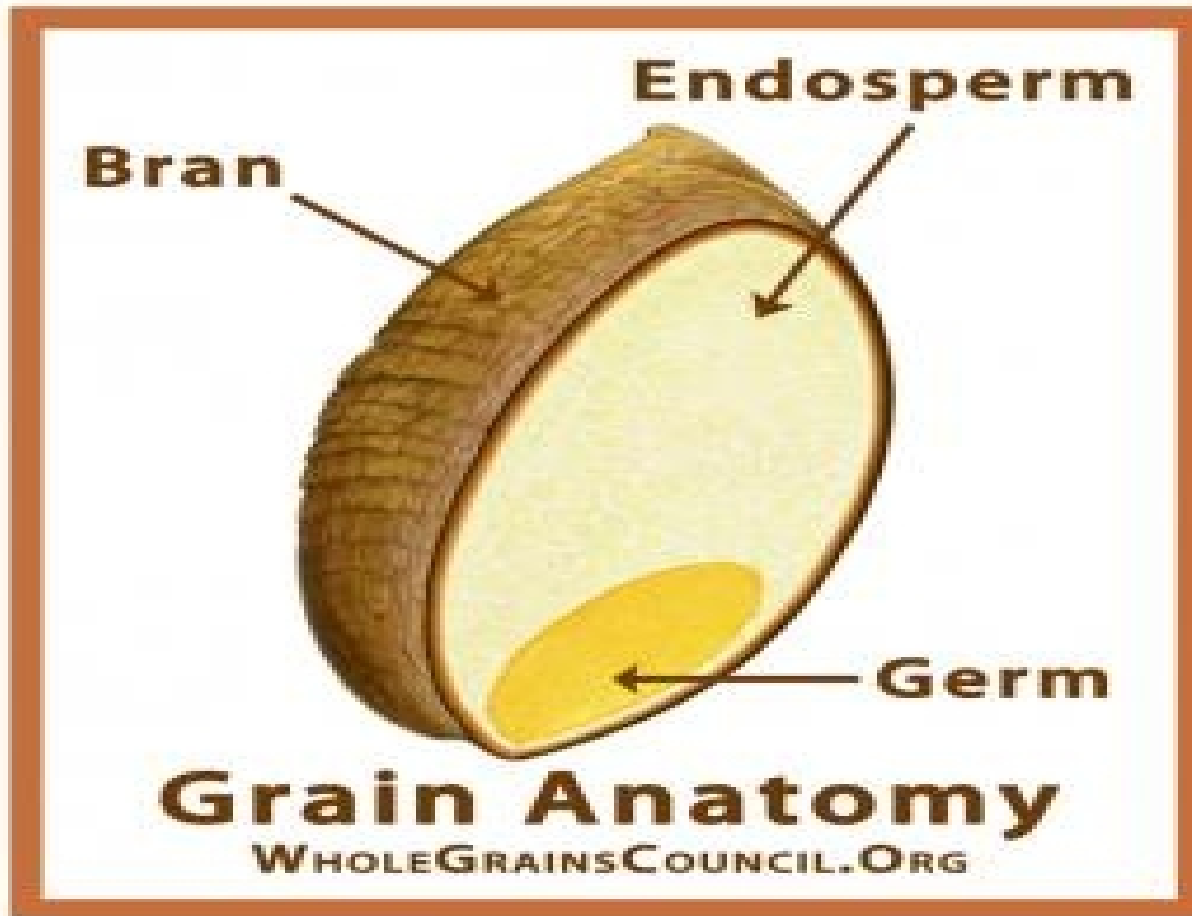
# FOODS THAT BOOSTS MEMORY

- Oil based salads
- Fish
- Dark green leafy vegetables
- Avocado
- Sunflower seeds
- Peanuts and peanut bitter.

# FOODS THAT BOOSTS MEMORY

- Red wine
- Berries
- Whole grain
- Tomatoes
- Exercise
- Pumpkin seeds (handfull a day for zinc)
- Ground nuts (Vit E)

# GRAIN



# WHOLEGRAIN BREAD



# BLUEBERIES



# TOMATOES



# TOMATOES

- There is good evidence to suggest that lycopene, a powerful antioxidant found in *tomatoes*, could help protect against the kind of free radical damage to cells which occurs in the development of dementia, particularly Alzheimer's.

# B6, B12, AND FOLIC ACID

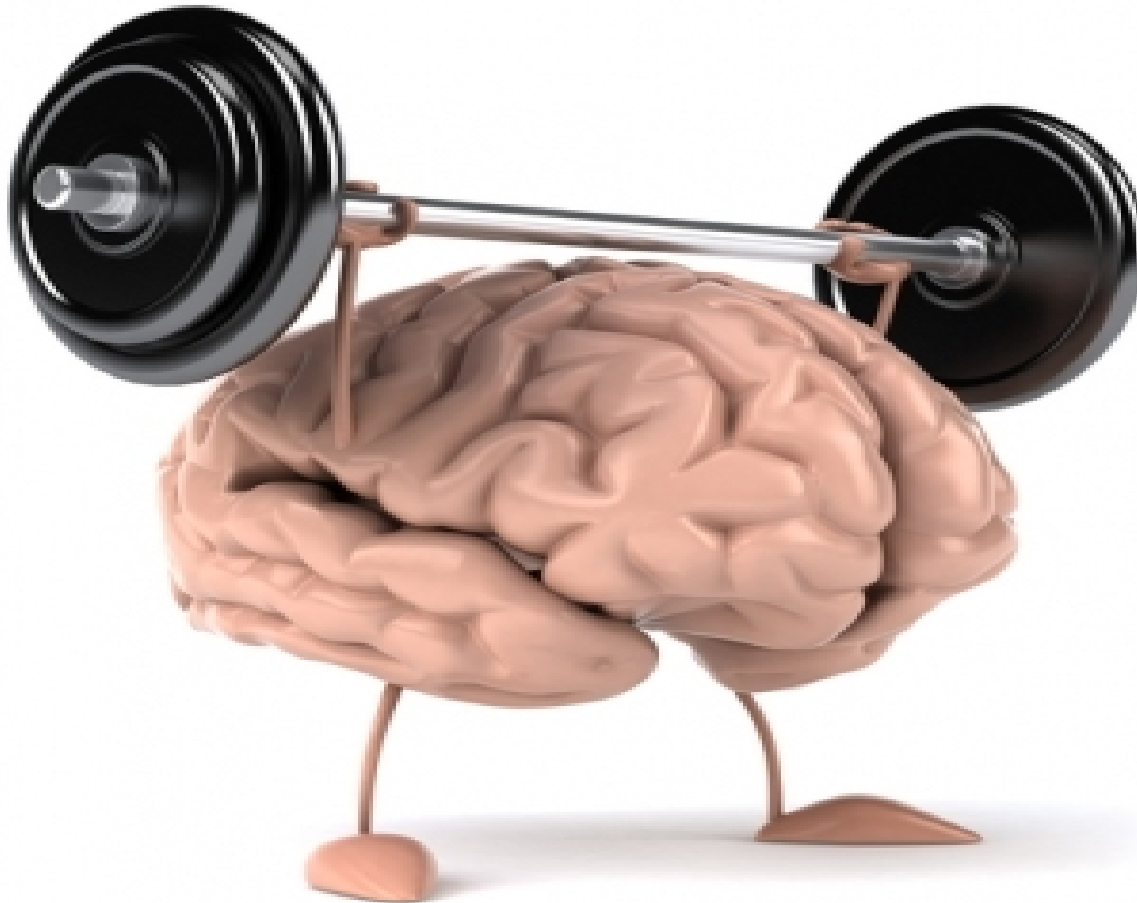
- Certain *B vitamins* - B6, B12 and folic acid - are known to reduce levels of homocysteine in the blood. Elevated levels of homocysteine are associated with increased risk of stroke, cognitive impairment and Alzheimer's disease. *A study* of a group of elderly patients with mild cognitive impairment found that after two years of intervention with high doses of B6, B12 and folic acid there was significantly less brain shrinkage compared to a subset given placebo treatment.



# Purple Sweet potato

- **The purple sweet potato has been found to have special antioxidant compounds that actually improve your memory, according to a 2003 study from Korea. This study, from Chungnam National University, found that anthocyanins in sweet potatoes exhibited "memory enhancing effects".**

# Exercise and the brain



# OMEGA 3

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# OMEGA 3 CAPSULES



# SOURCES OF OMEGA 3

- Plants – walnut
- Animal –fish (major ) and eggs(from hens fed on greens and insects).
- Beef from cows fed on grass but not cereals.



# Superior source of omega 3

- **Krill** are small crustaceans of the order **Euphausiacea**, and are found in all the world's oceans. They are harvested in south east asian countries eg Japan



# HEALTH BENEFITS

- Supplementation with omega-3 fatty acids does not affect the risk of death, cancer or heart disease.
- Omega-3 fatty acids are important for normal metabolism.  
Omega 3 boosts memory.



# HEALTH BENEFITS

- Omega-3 fatty acids modestly lower blood pressure (systolic and diastolic) in people with hypertension and in people with normal blood pressure.
- People with varicose veins, may benefit from omega 3, which may stimulate blood circulation and increase the breakdown of fibrin, a protein involved in blood clotting and scar formation.
- Omega-3 fatty acids reduce blood triglyceride levels but do not significantly change the level of LDL cholesterol or HDL cholesterol in the blood.

# HEALTH BENEFITS

- It is beneficial in rheumatoid arthritis, arthritis and joint pains.

# Omega 3 and mental health

- Omega 3 is useful in treatment of depression but not mania.
- The link between omega-3 and depression has been attributed to the fact that many of the products of the omega-3 synthesis pathway play key roles in regulating inflammation inducers such as prostaglandin E3 which have been linked to depression.

# Cognitive aging

- omega-3 fatty acids can reduce the risk of dementia, but does not treat in dement.

# SPECIAL FOODS

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# OLIVE OIL

- Prolongs life
- Prevents arthritis

# GARLIC – LOWERS BLOOD PRESSURE



Bananas – high in potassium which helps lower blood pressure





# Beets – Lower blood pressure



# MORINGA

- Much of the plant is edible by humans or by farm animals. The leaves are rich in protein, vitamin A, vitamin B, vitamin C, and minerals.
- A 100-g portion of fresh moringa leaves has 9.3 g protein, 434 mg calcium, 404 mg potassium, 738  $\mu\text{g}$  vitamin A, and 164 mg vitamin C.

# MORINGA

- Moringa is a plant that is native to the sub-Himalayan areas of India, Pakistan, Bangladesh, and Afghanistan. It is also grown in the tropics. The leaves, bark, flowers, fruit, seeds, and root are used to make medicine.

Moringa is used for anemia; arthritis and other joint pain (rheumatism); asthma; constipation; diabetes; diarrhea; ; stomach pain; stomach and intestinal ulcers; intestinal spasms; headache; heart problems; high blood pressure; fluid retention; and bacterial, fungal, viral, and parasitic infections.

# MORINGA

- Increase sex drive (aphrodisiac)
- Boost immunity

# MORINGA



# MORINGA SIDE EFFECTS

- Avoid eating the root of the moringa tree. It contains alkaloid *spirochin*, which is a potential neuro-paralytic toxin and that can cause **paralysis** and death.

Leaves of moringa have **laxative** properties. When eaten in large quantities they may cause stomach upset, heart burn, gaseous

# MORINGA SIDE EFFECTS

- Moringa when taken directly with water or raw may cause **heart burns**. It is better to cook it.
  - The taste of moringa is not too pleasant. If you are using it for the first time, it may produce a gag reflex. It may also cause nausea when consumed in large quantities.
  - The chemicals found in the roots, flowers and the bark could cause uterine contraction in pregnant women and increase the risk of a **miscarriage**.

Avoid moringa if **breast feeding**, since the chemicals may not be safe for the infants.





# MORINGA SIDE EFFECTS

- Studies have shown that moringa can also cause disorders affecting the blood such as white blood cell count decrease, **gum bleeding**, petechiae (red dots by bleeding under the skin because of broken blood vessels), lower number of blood platelets, etc.

# Reference

- 1) [Bbcgoonfood.com](http://Bbcgoonfood.com)