

# Vitamins

# What are vitamins?

Substances required in small quantities for very specific functions in the body.

Vitamins are essential for survival.

Our body cells do not make vitamins so we need to get them from our diet or from the sun.

Deficiency of any vitamin will result in poor health and illness

# Vitamins

- Vitamins we need for good health:
- Vitamins
  - A
  - B family
  - C
  - D
  - E
  - K

# Vitamin A

- Necessary for:
  - Healthy eyesight
  - Healthy skin
  - Healthy immune system

# Vitamin A

- Vitamin A necessary for good eyesight
  - Deficiency
    - Night blindness
    - Decrease of mucus in tears
    - Leads to ulcers on eyes and scarring to
    - Permanent Blindness

# Food sources of vitamin A

- Beef Liver
- Sweet Potatoes
- Butternut Squash
- Carrots
- Eggs
- Butter
- Kale, collards, spinach

# Vitamin D

- Growth of bone
- Maintenance of bone
  - Vitamin D helps the absorption of calcium into our body
- Regulates amount of calcium in bone and in blood
- Immune function
- May play a role in cancer prevention, heart disease prevention, type 2 diabetes prevention, autoimmune diseases

# Sources of vitamin D

- Sun
- Foods – Sardines, Salmon, Tuna, Mushrooms
- Foods artificially fortified with vitamin D
  - Milk, orange juice

# Many Americans deficient in vitamin D

- People at risk of vitamin D deficiency
  - Avoids fortified dairy foods (food allergies, vegan, lactose intolerant, dislike dairy)
  - Avoid sun exposure
  - Regularly use sunscreen
  - Do not eat fish on a regular basis

# Vitamin D deficiency

- Rickets in children
  - Bowed legs in growing children
  - Bones do not calcify due to vitamin D deficiency
  - Permanent deformity

# Vitamin D deficiency

- Osteomalacia
  - Soft bones in adults as result of bone remodeling without even vitamin D to calcify bones
  - Resulting in bone pain and tenderness
  - Higher risk of osteoporosis
- Frequent infections
- Increased risk of bone fractures

# Vitamin E

- Vitamin E necessary for :
  - healthy immune system

# Dietary Sources of vitamin E

- Almonds
- Peanuts
- Sunflower seeds
- Avocados

# Vitamin K

- Vitamin K necessary for
  - blood clotting
  - bone formation

# Deficiency of vitamin K

- Impaired blood clotting
  - Manifest as easy bruising, nosebleeds

# Food Sources of vitamin K

- Kale
- Spinach
- Broccoli
- Brussels Sprouts

# Vitamin B family

- Vitamin B family:
- B1 (thiamine)
- B2 (riboflavin)
- B3 (niacin)
- B5 (pantothenic acid)
- B6 (pyridoxine)
- B7 (biotin)
- B9 (folate)
- B12 (cobalamin)

# Vitamin B family

- Play role in energy metabolism
- B vitamins do not provide energy, but assist in transforming our food into energy.

# Vitamin C

- Vitamin C
  - Involved in synthesis of collagen which:
  - Helps build bone
  - Helps build teeth
  - Repairs coronary artery walls
  - Builds immune system
  - Enhances iron absorption

# Vitamin C

- Vitamin C
  - humans lack ability to make vitamin C
  - along with guinea pig, monkeys, fruit bats and gorillas but all other animals make their own vitamin C

# Food Sources of Vitamin C

- Kiwi fruit
- Red bell peppers
- Oranges
- Pineapple
- Brussels sprouts
- Broccoli
- Green chili peppers

# Deficiency of Vitamin C

- Bleeding Gums
- Bruising
- Poor wound healing
- Severe joint pain
- Low immunity

# Vitamins for Bone Health

- Vitamin C makes collagen
- (Bone is made up of collagen + calcium)
- Vitamin D helps absorb calcium in digestive tract
- Vitamin K directs calcium into our bones not in our arteries
- Vitamin A

# Vitamins to enhance immune system

- Vitamin A
- Vitamin C
- Vitamin D
- Vitamin E

# Vitamin for healthy vision

- Vitamin A important for healthy vision
- Vitamin A deficiency starts as night blindness
- Vitamin A deficiency leading cause of blindness in children living in undeveloped countries

# Vitamin for Healthy Blood clotting

- Vitamin K

# Vitamins that convert food into energy in our body

- Vitamin B family

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