NUTRITIONAL DEFICIENCIES - PREVENTION

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SESSION OBJECTIVES

✓ AT THE END OF THE SESSION
✓ PARTICIPANTS
✓ -- will know about Nutritional deficiencies
✓ -- will understand about the diseases caused by nutritional deficiencies
✓ -- will know how to prevent them
Nutritional deficiencies, known as **malnutrition**, are the result of your body not getting enough of the nutrients it needs.

Children are more at risk for serious complications due to nutritional deficiencies than adults.

You can prevent nutritional deficiencies by making sure you get enough nutrients from your diet.

You should talk to your doctor and dietitian to help make any decisions on dietary changes and before taking any nutritional supplements.
The body requires many different vitamins and minerals that are crucial for both development and preventing disease.

These vitamins and minerals are often referred to as micronutrients.

They aren’t produced naturally in the body, so you have to get them from your diet.
A nutritional deficiency occurs when the body doesn’t absorb the necessary amount of a nutrient.

Deficiencies can lead to a variety of health problems.

These can include problems of digestion, skin problems, vision problems; stunted or defective bone growth, and even dementia.
The amount of each nutrient you should consume depends on your age.

In the United States, many foods that you buy in the grocery store (such as cereals, bread, and milk) are fortified with nutrients that are necessary to prevent nutritional deficiency.

But sometimes your body is unable to absorb certain nutrients even if you are consuming them.
PEOPLE AFFECTED

- There were 793 million undernourished people in the world in 2015. This was 216 million fewer people than in 1990 when it was 991 million undernourished people.
- This is despite the world's farmers producing enough food to feed around 12 billion people – almost double the current world population.
- Malnutrition, as of 2010, was the cause of 1.4% of all disability adjusted life years.
## NUMBER OF UNDERNOURISHED GLOBALLY

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Number in millions</td>
<td>843</td>
<td>788</td>
<td>848</td>
<td>923</td>
<td>793</td>
<td></td>
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</tr>
<tr>
<td>Percentage in the developing world</td>
<td>37%</td>
<td>28%</td>
<td>20%</td>
<td>16%</td>
<td>17%</td>
<td>13.5%</td>
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</tbody>
</table>
WHAT ARE THE SYMPTOMS OF NUTRITIONAL DEFICIENCIES?

- The symptoms of a nutritional deficiency depend on which nutrient the body lacks. However, there are some general symptoms you might experience, including:
  - pallor (pale skin)
  - Fatigue; weakness
  - trouble breathing; unusual food cravings
  - hair loss; periods of lightheadedness
  - Constipation; sleepiness
  - heart palpitations
  - feeling faint or fainting
  - Depression; tingling and numbness of the joints
  - menstrual issues (such as missed periods or very heavy cycles)
  - poor concentration
**SIGNS OF NUTRITIONAL DEFICIENCIES**

**EYES**
- Dark circles or bags under the eyes: Allergies, food intolerances, dehydration
- Poor night vision: Vitamin A
- Ruptured blood vessels in the eyes: Vitamin C
- Nearsightedness: Vitamin D
- Pale lower eyelid: Iron

**TEETH & GUMS**
- Bleeding gums: Vitamin C, folic acid
- Crowded teeth: Calcium, Vitamin K

**HAIR**
- Hair loss: B2, B5, Biotin, D, Zinc
- Dry hair: Vitamin A, E, Omega 3, Protein, Iodine, Selenium, Biotin
- Dandruff: Selenium, Omega 3, Vitamin A

**NAILS**
- Spoon shaped nails: B12, Iron
- White marks: Calcium or Zinc
- Pale nails: Iron, Biotin
- Brittle nails: Calcium, Magnesium, Iodine
- Cuticles tear easily: Protein

**MUSCLES & JOINTS**
- Muscle cramping: Magnesium, B1, B2, B6
- Twitching: B1, B2, B3, B6, B9, Vitamin D, Magnesium, Calcium,
- Edema/Swelling: B1, B6, Potassium
- Numbness or tingling: B12, B5
- Clicking Joints: Manganese

**MOUTH**
- Canker sores: B3, B12, Folic acid, Calcium
- Cracks in the corner of the mouth: B2
- Weak tooth enamel: Vitamin A, D, K, Calcium
- Painful tongue: B2, B3, Folic Acid
- Loss of smell or taste: Zinc

**SKIN**
- Bumps on the back of the arms: Vitamin A
- Dry or rough skin: Vitamin A, E
- Unusual nosebleeds: Vitamin C
- Easy bruising: Vitamin C
- Acne during menstruation: B6
- Dermatitis: B2, B3, Biotin
- Red stretch marks: Zinc

**EMOTIONAL/MENTAL**
- Depression: B1, B5, Biotin, PABA
- Dementia: B1, B3, B12, folic acid,
- Nervousness/Irritability: B1, B6, B5
- Insomnia: B3, B5, B6, D3
- Dizziness: Iron, B2, B12
In those with malnutrition some of the signs of dehydration differ.  
Children; however, may still be interested in drinking, have decreased interactions with the world around them, have decreased urine output, and may be cool to touch.
<table>
<thead>
<tr>
<th>Site</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>Moon face (kwashiorkor), simian facies (marasmus)</td>
</tr>
<tr>
<td>Eye</td>
<td>Dry eyes, pale conjunctiva, Bitot's spots (vitamin A), periorbital edema</td>
</tr>
<tr>
<td>Mouth</td>
<td>Angular stomatitis, cheilitis, glossitis, spongy bleeding gums (vitamin C), parotid enlargement</td>
</tr>
<tr>
<td>Teeth</td>
<td>Enamel mottling, delayed eruption</td>
</tr>
<tr>
<td>Hair</td>
<td>Dull, sparse, brittle hair, hypopigmentation, flag sign (alternating bands of light and normal color), broomstick eyelashes, alopecia</td>
</tr>
<tr>
<td>Skin</td>
<td>Loose and wrinkled (marasmus), shiny and edematous (kwashiorkor), dry, follicular hyperkeratosis, patchy hyper- and hypopigmentation, erosions, poor wound healing</td>
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<tr>
<td>Nail</td>
<td>Koilonychia, thin and soft nail plates, fissures or ridges</td>
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<tr>
<td>Muscles</td>
<td>Muscles wasting, particularly in the buttocks and thighs</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
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<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>Skeletal</td>
<td>Deformities usually a result of calcium, vitamin D, or vitamin C deficiencies</td>
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<tr>
<td>Abdomen</td>
<td>Distended - hepatomegaly with fatty liver, ascites may be present</td>
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<tr>
<td>Cardiovascular</td>
<td>Bradycardia, hypotension, reduced cardiac output, small vessel vasculopathy</td>
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<tr>
<td>Neurologic</td>
<td>Global development delay, loss of knee and ankle reflexes, poor memory</td>
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<tr>
<td>Hematological</td>
<td>Pallor, petechiae, bleeding diathesis</td>
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<tr>
<td>Behavior</td>
<td>Lethargic, apathetic</td>
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<tr>
<td>Vitamin/Mineral</td>
<td>Deficiency disease/disorder</td>
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<tr>
<td>Vitamin A</td>
<td>Loss of vision</td>
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<tr>
<td>Vitamin B1</td>
<td>Beriberi</td>
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<tr>
<td>Vitamin C</td>
<td>Scurvy</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>Rickets</td>
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<tr>
<td>Calcium</td>
<td>Bone and tooth decay</td>
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<tr>
<td>Iodine</td>
<td>Goiter</td>
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<tr>
<td>Iron</td>
<td>Anaemia</td>
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</table>
You may display all of these symptoms or only groups of them.

Over time, most people adapt to the symptoms. This can cause the condition to go undiagnosed.

Schedule a checkup with your doctor if you experience prolonged periods of fatigue, weakness, or poor concentration.

These symptoms could be a sign of the beginning of a serious deficiency.
What Causes Nutritional Deficiencies?

- The usual cause of nutritional deficiencies is a poor diet that lacks essential nutrients.
- The body stores nutrients, so a deficiency is usually caught after it’s been without the nutrient for some time.
- A number of diseases and conditions — including colon cancer and gastrointestinal conditions — can lead to an iron deficiency.
- Pregnancy can also cause a deficiency if the body diverts iron to the fetus.
- Researchers have found associations between bariatric surgery (surgery that reduces the size of the stomach to achieve weight loss) and nutritional deficiency.
- People who are candidates for bariatric surgery may already be nutrient deficient due to poor diet.
- Before and after the surgery, you should talk to your doctor and dietitian to set up a thorough nutrition plan.
It’s possible to be deficient in one or more or any of the nutrients that your body needs. Some common types of nutritional deficiencies include:

- Iron deficiency
- Vitamins deficiency
- Protein deficiency
- Calcium deficiency
IRON DEFICIENCY

The most widespread nutritional deficiency worldwide is iron deficiency.

Common Cause is worm infestation - hookworm

Iron deficiency can lead to anemia, a blood disorder that causes fatigue, weakness, and a variety of other symptoms.

Iron is found in foods such as dark leafy greens, red meat, and egg yolks.

It helps your body make red blood cells. When you’re iron deficient, your body produces fewer red blood cells.
The red blood cells it produces are smaller and paler than healthy blood cells.

They’re also less efficient at delivering oxygen to your tissues and organs.

According to the World Health Organization (WHO), over 30 percent of the world’s population suffers from this condition. In fact, it’s the only nutritional deficiency that is prevalent in both developing and industrialized countries.

Iron-deficiency anemia affects so many people that it’s now widely recognized as a public health epidemic.
VITAMIN A DEFICIENCY

- Vitamin A is a group of nutrients that is crucial for eye health and functioning and reproductive health in men and women.
- It also plays a part in strengthening the immune system against infections.
- According to the WHO, a lack of vitamin A is the leading cause of preventable blindness in children. Pregnant women who are deficient in vitamin A have higher maternal mortality rates as well.
- For newborn babies, the best source of vitamin A is breast milk. For everyone else, it’s important to eat plenty of foods that are high in vitamin A.
THESE INCLUDE

- milk
- eggs
- green vegetables, such as kale, broccoli, and spinach
- orange vegetables like carrots, sweet potatoes, and pumpkin
- reddish yellow fruits, like apricots, papaya, and peaches
1. Eye disease
2. Xerophthalmia (dry eyes)
3. Growth retardation
4. Dry skin (‘toad’ skin)
5. Repeated GIT infection
6. Urinary tract store formation.
7. Sterility
Vitamin A and Its Benefits

Apple - Get a healthier heart

Carrot - Beautiful skin, cancer prevention, and anti-aging

Spinach - Low in calories and high in vitamins

Broccoli - Contains a high amount of potassium, which helps maintain a healthy nervous system

Sweet Potatoes - Rich source of anti-oxidants

Pumpkin - An essential antioxidant that fights cancer

Animal Sources & Dairy Products - Give us a lots of proteins and Omega 3

Capsicum - Lowering blood pressure, reducing cholesterol and warding off strokes and heart attacks

Apricots - Its ability to treat indigestion, constipation, earache, fevers, skin diseases, cancer and anemia
Vit A deficiency

Vitamin A
Reduced Vision Due To Vitamin A Deficiency
KERATOMALACIA
Xerophthalmia Due To Vitamin A Deficiency
Fig. 4 Follicular hyperkeratosis resulting from vitamin A deficiency resembles "gooseflesh" but can be distinguished from it because the bumps do not disappear when the skin is rubbed. These lesions commonly appear on the lateral surface of the arm and extensor surface of the thigh.
VITAMIN D DEFICIENCY

According to the **Vitamin D Council**, about 40 percent of the population worldwide is affected by vitamin D deficiency.

Dark skinned individuals are at a higher risk of vitamin D deficiency.

Vitamin D is essential for healthy bones.

It helps the body maintain the right levels of calcium in order to regulate the development of teeth and bones.

A lack of this nutrient can lead to stunted or defective bone growth.

Osteoporosis, caused by a lack of calcium and vitamin D, can lead to porous and fragile bones that break very easily.
Vitamin D is found naturally in only a few foods. Foods with vitamin D include:

- fish liver oils
- fatty fish; mushrooms
- egg yolks; liver

Many dairy products in the United States are fortified with vitamin D.

**Ultraviolet light from the sun is also a source of vitamin D.**

According to the NIH’s Office of Dietary Supplements, research suggests that five to 30 minutes of sun exposure twice a week on the face, arms, neck, or back can provide you with enough vitamin D.

(Although recommended for UV protection, sunscreen does hinder vitamin D absorption from sunlight through the skin, so spend a few minutes in the sun prior to sunscreen for optimal vitamin D absorption).
Sources For Vitamin D3

- Milk Product
- Mushroom
- Fish
- Egg yolk

Sun exposure
Vitamin D

The body makes vitamin D when it is exposed to Ultraviolet (UV) rays from the sun.

FOOD SOURCES:

- Cheese
- Margarine
- Butter
- Fortified Milk
- Healthy Cereals
- Fatty Fish
A deficiency of vitamin D or an inability to utilize vitamin D may lead to a condition called rickets, a weakening and softening of the bones brought on by extreme calcium loss.
How To Prevent Vitamin D Deficiency?

Vitamin D deficiency can be prevented by exposing yourself to natural sunlight; 15 minutes in the early part of the day after sunrise should be good enough.

**Diet** - Vitamin D, being fat soluble vitamin, is found in animal products like milk, cheese, butter and some fish. Foods fortified with vitamin D are also available like dairy products, breads and cereals.

**Supplementation** - A vitamin D supplement may be required for some, depending on your existing levels of vitamin D, your level of sun exposure and present joint conditions. Vitamin D is known to build up toxic levels if taken inappropriately.
**VITAMIN B-1 (THIAMINE) DEFICIENCY**

- Thiamine is an important part of your nervous system. It also helps your body turn carbohydrates into energy as part of your metabolism.
- A lack of thiamine can result in weight loss and fatigue, as well as some cognitive symptoms such as confusion and short-term memory loss.
- Thiamine deficiency can also lead to nerve and muscle damage and can affect the heart. In the United States, thiamine deficiency is most often seen in those who chronically abuse alcohol.
- Alcohol reduces the absorption of thiamine, the body’s ability to store thiamine in the liver and the body’s ability to convert thiamine to a usable form.
- Many breakfast cereals and grain products in the United States are fortified with thiamine. Pork is also a good source of the vitamin.
Tongue Inflammation Due To Vitamin B Deficiency
Beriberi Disease
VITAMIN B-3 (NIacin) DEFICIENCY

- Vitamin B-3 (niacin) is another mineral that helps the body convert food into energy.
- A severe deficiency of niacin is often referred to as pellagra.
- Niacin is found in most proteins. As a result, this condition is rare in meat eating communities.
- Symptoms of pellagra include 3 Ds - diarrhea, dementia, and dermatitis (skin problems).
- You can usually treat it with a balanced diet and vitamin B-3 supplements.
VITAMIN B-9 (FOLATE) DEFICIENCY

Vitamin B-9, often referred to as folate (folic acid is the synthetic form found in supplements or fortified foods), helps the body create red blood cells and produce DNA.

It also helps brain development and nervous system functioning.

Folate is especially important for fetal development.

It plays a crucial role in the formation of a developing child’s brain and spinal cord.

Folate deficiency can lead to severe birth defects, growth problems, or anemia.
Foods containing folic acid:
- beans and lentils
- citrus fruits
- leafy green vegetables
- asparagus
- meats such as poultry and pork
- Shellfish; fortified grain products

Most people in the United States get enough folate. But pregnant women and women of childbearing age sometimes don’t consume enough folate for a healthy pregnancy. The National Institutes of Health (NIH) recommend that women who are pregnant or who may become pregnant consume up to 400 mg of folate or folic acid each day to help prevent birth defects.

IRON & FOLIC ACID TABs are given.
CALCIUM DEFICIENCY

 Calcium helps your body develop strong bones and teeth.

 It also helps your heart, nerves, and muscles work the way they should.

 Calcium deficiency often doesn’t show symptoms right away, but it can lead to serious health problems over time.

 If you aren’t consuming enough calcium, your body will use the calcium from your bones instead, leading to bone loss.
Calcium deficiencies are related to low bone mass, weakening of bones due to osteoporosis, convulsions, and abnormal heart rhythms. They can even be life-threatening. Postmenopausal women experience greater bone loss due to changing hormones and have more trouble absorbing calcium. The best sources of calcium are dairy products such as milk, yogurt, cheese, calcium-set tofu, and small fish with bones. Vegetables like kale and broccoli also have calcium, and many cereals and grains are calcium-fortified.
Vitamin C Deficiency

Scorbutic gums. Unlike other lesions of the mouth, scurvy presents a symmetrical appearance without infection.

Pinpoint hemorrhages. Small red spots appear in the skin, indicating spontaneous bleeding internally.
Do You Know?

Studies show that large doses of Vitamin C intake (At least 500mg and above daily) have the ability to prevent diseases such as Coronary Heart Disease, Cancer, Stroke and Gout.

To obtain 500mg of vitamin C daily, you require either:
→ 7 medium Oranges
→ 7 Medium Kiwifruits
→ 7 cup of Strawberries
→ 8 cup of Orange juices
Vitamin E deficiency

Vitamin E deficiency is extremely rare in humans. It is limited to those individuals with fat malabsorption, or patients on total parenteral nutrition, or in formula fed premature infants. Changes occurring in severe deficiency include, increased hemolysis of red blood cells, creatinuria deposition of brandish ceroid pigments in smooth muscles and, in some cases, development of a form of muscular dystrophy.
Bleeding Due To Vitamin K Deficiency
PROTEIN DEFICIENCY

✗ Proteins are the major constituents of the body and are required for most of the vital body functions.

✗ Deficiency of proteins can cause many health issues and also diseases like kwashiorkor and marasmus.
As there is continuous proteins building as well as degradation in human body for its normal functions, their regular optimal intake is very essential for keeping good health.

If our body does not receive enough of it from the diet, the protein in the muscles and tissues in the body is depleted.

Protein deficiency diseases occur in developing countries due to poverty as well as lack of knowledge about their nutritional requirements.

In regions devastated by strife, wars, drought, famine, floods and blights, food becomes scarce and protein inadequacy and connected pathological conditions become common.
Something as simple as walking leaves you exhausted? It could be due to protein deficiency.
4 SIGNS OF PROTEIN DEFICIENCY DISEASES

- CONSTANT CRAVING
- MUSCLE AND/OR JOINT PAIN
- CAN'T SLEEP WELL?
- LOW ENERGY, MOODINESS, AND STRESS?

www.poultryprotein.com
6 Warning Signs of Protein Deficiency

Information for Your Health

1. Puffy Cheeks
2. Swollen Eyes
3. Swollen Hands
4. Thinning Hair
5. Brain Fog/Lethargic
6. Dry/Flaky Skin
CHILD WITH KWASHIRKOR - PROTEIN DEFICIENCY
HOW ARE NUTRITIONAL DEFICIENCIES DIAGNOSED?

✗ Your doctor will discuss your diet and eating habits with you if they suspect you have a nutritional deficiency.

✗ They will ask what symptoms you’re experiencing.

✗ Make sure to mention if you have suffered from any periods of constipation or diarrhea, or if blood has been present in your stool.

✗ Your nutritional deficiency may also be diagnosed during routine blood tests, including a complete blood count (CBC). This is often how doctors identify anemia.
WILL A NUTRITIONAL DEFICIENCY CAUSE LONG-TERM PROBLEMS?

× Most problems caused by nutritional deficiencies will stop once you’re no longer deficient.

× However, in some cases, there may be lasting damage. This usually only occurs when the deficiency has been severe and has lasted a long time.

× For example, a prolonged vitamin B-1 deficiency can be associated with:

  × stunted growth; depression
  × a form of dementia known as Wernicke-Korsakoff syndrome
  × .
Nutritional deficiencies in children can be serious and lead to lasting negative health outcomes.

If you’re experiencing symptoms and are concerned that you aren’t obtaining enough of a certain nutrient, talk to your doctor.

They can discuss your diet with you and help figure out whether you should make some dietary changes or start taking supplements.
A SOMALI BOY RECEIVING TREATMENT FOR MALNOURISHMENT AT A HEALTH FACILITY
MALNOURISHED AFGHAN CHILD BEING TREATED BY A MEDICAL TEAM.
HOW ARE NUTRITIONAL DEFICIENCIES TREATED?

- The treatment for a nutritional deficiency depends on the type and the severity of the deficiency.
- Your doctor will find out how severe the deficiency is, as well as the likelihood of long-term problems caused by the lack of nutrients. They may order further testing to see if there is any other damage before deciding on a treatment plan.
- Symptoms usually fade when the correct diet is followed or supplemented.
DIETARY CHANGES

A doctor may advise you on how to change your eating habits in the case of a minor deficiency. For example, anemia sufferers should include more meat, eggs, poultry, vegetables, and cereals. GROUND NUTS WITH JAGGERY

Your doctor may refer you to a dietitian if your deficiency is more severe. They may recommend keeping a food diary for a few weeks. When you meet with the dietitian, you’ll go over the diary and identify changes you should make.

Typically, you will meet with the dietitian regularly. Eventually, you may have a blood test to confirm that you’re no longer deficient.
<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>POTENTIAL</th>
<th>WHAT IT DOES</th>
<th>WHERE IT’S FOUND</th>
<th>SYMPTOMS AND PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B1 thiamin</td>
<td>VERY COMMON</td>
<td>converts carbs to sugar, breaks down fats and protein, healthy digestion, nervous system, skin, hair, eyes, mouth, liver, immune system</td>
<td>pork, organ meats, wholegrain/enriched cereals, brown rice, wheat germ, bran, brewer’s yeast, blackstrap molasses</td>
<td>decreased heart function, age-related cognitive decline, Alzheimer’s, fatigue</td>
</tr>
<tr>
<td>Vitamin B2 riboflavin</td>
<td>LOW</td>
<td>metabolism, converts carbs to sugar, breaks down fat &amp; protein, healthy digestion, nervous system, skin, hair, eyes, mouth, liver, antioxidant properties</td>
<td>brewer’s yeast, almonds, organ meats, whole grains, wheat germ, mushrooms, soy, dairy, eggs, green vegetables</td>
<td>poor iron absorption, anemia, decreased free radical protection, cataracts, poor thyroid function, B6 deficiency, fatigue, elevated homocysteine</td>
</tr>
<tr>
<td>Vitamin B3 niacin</td>
<td>VERY COMMON</td>
<td>energy, digestion, nervous system, skin, hair, eyes, mouth, liver, eliminates toxins, sex/stress hormone production, improves circulation and cholesterol</td>
<td>beets, brewer’s yeast, meat, poultry, organ meats, fish, seeds, nuts</td>
<td>cracking, scaling skin, digestive problems, confusion, anxiety, fatigue, reduced endurance</td>
</tr>
<tr>
<td>Vitamin B6 pyroxidine</td>
<td>VERY COMMON</td>
<td>used in 100 enzymes for protein metabolism, RBC production, reduces homocysteine, healthy nerve &amp; muscle cells, DNA/RNA, B12 absorption, immune function</td>
<td>poultry, tuna, salmon, shrimp, beef liver, lentils, soybeans, seeds, nuts, avocados, bananas, carrots, brown rice, bran, wheat germ, whole-grain flour</td>
<td>depression, sleep and skin problems, elevated homocysteine, increase heart disease risk</td>
</tr>
<tr>
<td>Vitamin B12 cobalamin</td>
<td>VERY COMMON</td>
<td>healthy nerve cells, DNA/RNA, red blood cell production, iron function</td>
<td>fish, meat, poultry, eggs, dairy products</td>
<td>anemia, fatigue, weakness, constipation, loss of appetite, weight loss, numbness and tingling in the hands and feet, depression, confusion, dementia, poor memory, mouth or tongue soreness</td>
</tr>
<tr>
<td>Biotin</td>
<td>RARE</td>
<td>carbohydrate, fat, amino acid metabolism (the building blocks of protein)</td>
<td>meats, vegetables, unprocessed grains, brewer’s yeast, corn, cauliflower, kale, broccoli, tomatoes, avocado, legumes, lentils, egg yolks, milk, sweet potatoes, seeds, nuts, wheat germ, salmon</td>
<td>depression, nervous system abnormalities, premature graying, hair loss, skin problems</td>
</tr>
<tr>
<td>Folate</td>
<td>COMMON</td>
<td>brain function, mental health, DNA/RNA during infancy, adolescence and pregnancy, with B12 to regulate RBC production, iron function, reduce homocysteine</td>
<td>fortified cereals, grains, tomato juice, green vegetables, black-eyed peas, lentils, beans</td>
<td>anemia, impaired immune function, fatigue, insomnia, premature hair loss, high homocysteine, heart disease risk</td>
</tr>
<tr>
<td>Pantothenate</td>
<td>COMMON</td>
<td>RBC production, sex and stress-related hormones, immune function, healthy digestion, helps use other vitamins</td>
<td>meat, vegetables, whole grains, brewer’s yeast, avocado, legumes, lentils, egg yolks, milk, sweet potatoes, seeds, nuts, wheat germ, salmon</td>
<td>reduced stress tolerance, poor wound healing, skin problems, fatigue</td>
</tr>
<tr>
<td>Vitamin A retinol</td>
<td>COMMON</td>
<td>eyes, immune function, skin, essential to cell growth and development</td>
<td>milk, eggs, liver, fortified cereals, orange or green vegetables, fruits</td>
<td>night blindness, poor immune function, zinc deficiency, fat malabsorption</td>
</tr>
</tbody>
</table>
1. Vitamin A ------- Night blindness
2. Vitamin B1 ------- Beriberi
3. Vitamin B2 ------- Riboflavinosis
4. Vitamin B3 ------- Pellagra
5. Vitamin B5 ------- Paresthesia
6. Vitamin B6 ------- Anemia
7. Vitamin B7 ------- Dermatitis, enteritis
8. Vitamin B9 & Vitamin B12 ----- Megaloblastic anemia
9. Vitamin C ------- Scurvy, Swelling of Gums
10. Vitamin D ------- Rickets & Osteomalacia
11. Vitamin E ------- Less Fertility
FINALLY

VITAMIN M
Questions

Let's hear from you!
BEST WISHES