

Employee Health Hurdles

Nutrition March 17, 2021

Nutrition is NOT about discussing how many calories you eat or dieting. Nutrition is about the study of nutrients in food, how your body uses them, and the relationship between diet, health, and disease.

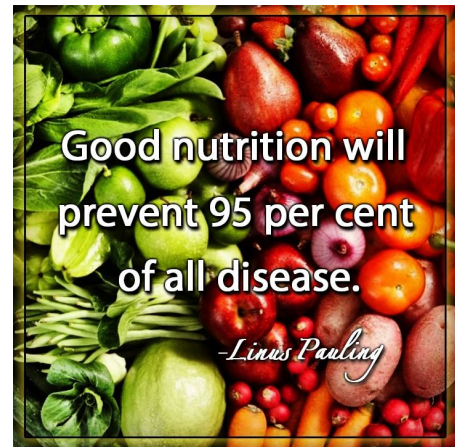
Nutrition also focuses on how people can use dietary choices to:

1. Reduce the risk of disease,
2. Determine the consequences of too much/ too little of a nutrient, and
3. Determine how allergies work.

Your body requires energy to function and that energy comes from calories. Calories are units of energy and describe how much energy your body could get from eating or drinking it.

Healthy diets include the following:

- A variety of foods including fruits, vegetables, legumes (beans, lentils), nuts, and wholegrains (unprocessed),
- 400 g (5 portions) of fruits and vegetables daily (excluding potatoes, sweet potatoes, starchy roots),
- Less than 10% free sugars (added sugars, fruit juices, manufacturer's added sugars) which equals 50g/ 12 level tsps. if you are consuming a 2000 calorie diet. Ideally less than 5%,
- Less than 30% fat saturated fat and trans fats should be limited to 10% each),
- Less than 5 g of salt (1 tsp). To further prevent high blood pressure and reduce your risk of heart disease, you should aim for 2 g/ day.



Determine Your Personal Nutrient Requirements (U.S. Standards but gives you a good starting point):

<https://www.nal.usda.gov/fnic/dri-calculator/>

Nutrients are molecules in food that everyone needs to make energy, grow, develop, and reproduce. There are two main types of nutrients: macronutrients and micronutrients.

Macronutrients:

Macronutrients are nutrients that people need in relatively large quantities and include carbohydrates, proteins, fats, and water.

1. Carbohydrates (sugar, starch, fibre):

- Sugar is a simple carb that breaks down quickly with rapid energy release (but no feeling of fullness) and can spike blood sugar levels.
- Frequent sugar spikes can increase the risk of type 2 diabetes.

Fibre:

- The body breaks down some fibre and uses it for energy (soluble).

- Other types of fibre are metabolized by gut bacteria (soluble).
- While other types of fibre pass through the body (insoluble).
- Fibre makes you feel fuller longer.

Research has linked fibre with reducing the risk of diabetes, cardiovascular disease, and colorectal cancer. Fibre encourages healthy gut microbiota, helps waste to move more smoothly through the body, and relieves constipation. Fibre has been shown to help regulate weight loss.

Fibre and unprocessed starch are complex carbohydrates:

- It takes the body time to break down and absorb complex carbohydrates.
- Complex carbohydrates are a more healthful choice than sugars and refined carbohydrates.

Recommended Intake:

- Adult males 38 g/ day.
- Adult females 25 g/ day.
- If you are over 50, you need less fibre Males 30 g/ day and females 21 g/ day.
- If you are pregnant or breast feeding you should aim for 28 g/ day.

Excess fibre (greater than 70 g/ day) can cause bloating, gas, constipation.

2. Protein

Protein is present in every cell in your body and keeps muscles, bones, and tissues healthy. It plays a role in blood clotting, fluid balance, immune response, vision, hormones, and enzymes. Protein is important during growth and development, especially during childhood, adolescent years, and pregnancy.

Good Sources of Protein:

- Seafood, lean meats, poultry, eggs, legumes (including beans/peas), nuts, seeds, soy product, and dairy (milk, cheese, yogourt). Whole grains and vegetables contain a lesser amount of protein.

Recommended Intake:

NATURAL REMEDIES	
Cold	Carrot, Pineapple, Ginger, Garlic
Headache	Apple, Cucumber, Kale, Ginger, Celery
Ulcer	Cabbage, Carrot, Celery
High B.P	Beet, Apple, Celery, Cucumber, Ginger
Kidney Detox	Carrot, Watermelon, Cucumber, Cilantro
Eyes	Carrot, Celery
Constipation	Carrot, Apple, Fresh Cabbage
Hangover	Apple, Carrot, Beet, Lemon
Nervousness	Carrot, Celery, Pomegranate
Depression	Carrot, Apple, Spinach, Beet
Diabetes	Carrot, Spinach, Celery
Asthma	Carrot, Spinach, Apple, Garlic, Lemon
Arthritis	Carrot, Celery, Pineapple, Lemon
Kidney Stone	Orange, Apple, Watermelon, Lemon
Stress	Banana, Strawberry, Pear
Fatigue	Carrots, Beets, Green Apple, Lemon, Spinach
Memory Loss	Pomegranate, Beets, Grapes
Indigestion	Pineapple, Carrot, Lemon, Mint

- Adult male 56 g/ day.
- Adult female 46 g/ day.
- On average an adult intake should be between 10 % to 35 % of daily calories or 50/day in a 2000 calorie diet.
- Influencing factors are activity levels, weight, height, and pregnancy.

3. Fats

Fats are essential for:

- Lubricating joints.
- Helping organs produce hormones.
- Enabling the body to absorb certain vitamins.
- Decreasing inflammation.
- Preserving brain health.

Too much fat can lead to obesity, high cholesterol, liver disease, and other health problems. The type of fat that you consume makes a difference, so try and consume unsaturated fat (such as olive oil) which are more healthful than saturated fats (animal fats).

4. Water:

The adult human is on average 60% water, blood contains 90% water, and the body requires water for numerous body processes. Water contains no calories and therefore, provides no energy.

Water is essential for:

- Lubricating the joints,
- Forming saliva and mucus,
- Delivering oxygen throughout your body,
- Boosting skin health and beauty,
- Cushioning the brain, spinal cord, and other sensitive tissues,
- Regulating body temperature,
- Aiding in the digestive system,
- Flushing body waste,
- Helping maintain blood pressure,
- Airways require it (dehydration causes the body to restrict airways to retain moisture= asthma and allergies),
- Making minerals and nutrients accessible,
- Preventing kidney damage,
- Boosting performance during exercise,
- Assists in weight loss (water vs fruit juice or pop),
- Decreases the chance of a hangover.



Recommended Intake:

- There is no universally agreed upon quantity of water to be consumed daily but you know you are adequately hydrated when you have pale yellow urine (roughly 8 glasses/ day).
- Water intake can also come from dietary sources such as fruits, vegetables, and soups.

If you have an insufficient intake of water, then you can become dehydrated, and your skin is more vulnerable to skin disorders and wrinkling.

Micronutrients:

Micronutrients are essential in small amounts and includes vitamins and fortified cereals and rice.

1. Minerals:

Your body needs carbon, hydrogen, and nitrogen. Your body also needs dietary minerals such as iron, potassium, etc. In cases a varied diet will provide the minerals person requires.

a) **Potassium (electrolyte):**

- Enables kidneys, heart, muscles, and to work properly.
- Recommended intake 4700 mg/ day.
- Insufficient intake can lead to high blood pressure, stroke, and kidney stones.
- Excess intake can be harmful to people with kidney disease.

Good Sources: Avocados, coconut water, bananas, dried fruit, squash, beans, and lentils.

b) **Sodium (electrolyte):**

Sodium helps maintain nerve and muscle functions and helps regulate fluid levels in your body.

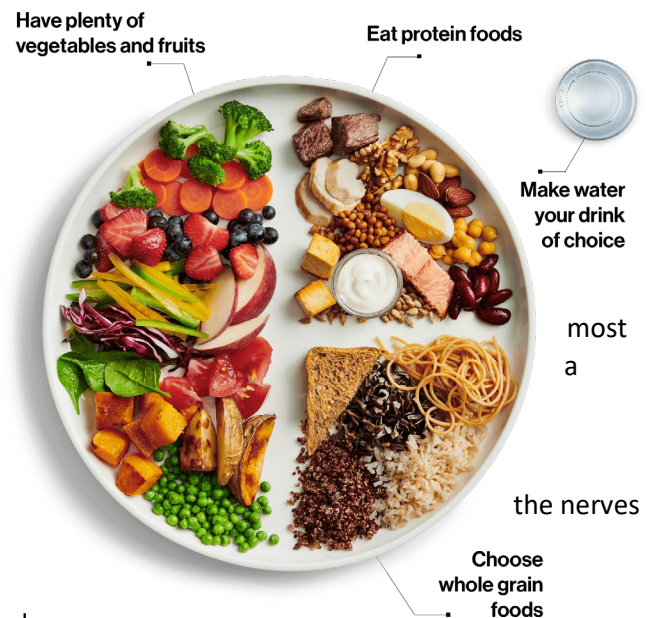
- Recommended intake is no more than 2300 mg/ day (approximately 1 tsp).
- Insufficient amounts lead to hyponatremia (causes lethargy, confusion, fatigue).
- Excess can lead to high blood pressure, which increase risks of cardiovascular disease and stroke.

Most adults consume excess salt and should consider naturally occurring and added salts in foods, food additives, and food processing.

c) **Calcium:**

Humans need calcium to form bones and teeth and supports the nervous system, cardiovascular health, and other functions.

- Recommended intake 1000 mg/ day (1200 mg/ day for women aged 51 and over).



- Insufficient intake causes bones and teeth to weaken. A severe deficiency includes tingling in the fingers and changes in heart rhythm, which can be life threatening.
- Excess intake can lead to constipation, kidney stones, and reduced absorption of other minerals.

Good sources: Dairy products, tofu, legumes, and green, leafy vegetables.

d) Phosphorus:

Phosphorus is present in every cell of the body and contributes to the health of the bones and teeth.

- Recommended intake is 700 mg/ day.
- Insufficient intake can lead to bone diseases, affects appetite, muscle strength, coordination, and can result in anemia, increased risk of infection, burning or prickling sensation in the skin, and confusion.
- Excess intake is unlikely to cause health problems though toxicity is possible through supplements and medications and may cause phosphorus metabolic problems.

Good Sources: Dairy products, salmon, lentils, and cashews

e) Magnesium:

Magnesium contributes to muscle and nerve function, helps to regulate blood pressure and blood sugar levels, and enables the body to produce proteins, bone, and DNA.

- Recommended intake is Adult males- 420 mg/ day, Adult females- 320 mg/ day.
- Insufficient intake can lead to weakness, nausea, tiredness, restless legs, sleep conditions, and other symptoms.
- Excess intake can result in digestive problems and eventually heart problems.

Good Sources: Nuts, spinach, and beans.

f) Zinc:

Zinc plays a role in the health of body cells, the immune system, wound healing, and the creation of proteins.

- Recommended intake for adult males- 11 mg/ day, adult females- 8 mg/ day.
- Insufficient intake can lead to hair loss, skin sores, changes in taste or smell, and diarrhea.

Magnesium and Health
 Magnesium is involved in more than 300 biochemical processes in the body including proper bone formation and maintenance of normal muscle and nerve function. What most people don't know is that it's actually easy to get on a daily basis, if you only know what foods to eat.

Mg¹²
 24.305

The required amount would be **350 mg** every day.

57% of the US population does not meet the US RDA for dietary intake of magnesium.

Why do we need Magnesium?

- Maintenance of normal heart rhythm
- Bone development
- Keeps blood pressure normal
- Muscle and nerve functioning
- Protein Synthesis

⚠ HYPOMAGNESEMIA - refers to inadequate intake of dietary magnesium or impaired absorption of magnesium

Signs & Symptoms:

- ▲ hyperexcitability
- ▲ muscular symptoms
- ▲ fatigue
- ▲ loss of appetite
- ▲ apathy
- ▲ confusion
- ▲ insomnia
- ▲ irritability
- ▲ poor memory
- ▲ reduced ability to learn

Possible Causes:

- diet ▲
- alcohol abuse ▲
- poorly controlled diabetes ▲
- excessive or chronic vomiting and/or diarrhea ▲

FOODS HIGHEST IN MAGNESIUM

- Brazil Nuts
- Sesame Seeds
- Sage
- Avocado
- Salmon
- Dry Roasted Soybeans
- Spearmint
- Brown Rice
- Yellow Corn
- Banana

- Excess intake can lead to digestive problems and headaches.

Good Sources: Oysters, beef, fortified breakfast cereals, and baked beans.

g) Iron:

Iron is crucial for the formation of red blood cells, which carry oxygen to all parts of your body. Iron also has a role in forming connective tissue and creating hormones.

- Recommended intake for all adults 8 mg/ day, females in their reproductive years 18 mg/day.
- Insufficient intake can lead to anemia, digestive issues, weakness, and difficulty thinking.
- Excess intake can lead to digestive issues, and very high intake can be fatal.

Good Sources: Fortified cereals, beef liver, lentils, spinach, and tofu.

h) Manganese:

Manganese is used by the body to produce energy, has a role in blood clotting, and supports immune function.

- Recommended intake for adult males is 2.3 mg/ day, and females 1.8 mg/ day.
- Insufficient intake can weaken the bones in children, skin rashes in men, and mood changes in women.
- Excess intake can lead to tremors, muscle spasms and in very high doses can lead to other symptoms.

Good Sources: Mussels, hazelnuts, brown rice, chickpeas, and spinach.

i) Copper:

Copper helps the body make energy and helps produce connective tissues and blood vessels.

- Recommended intake for adults are 99 mcg/ day.
- Insufficient intake causes tiredness, patches of light skin, high cholesterol, and rarely connective tissue disorders.

Iron And Health

Iron plays an important role in biology, forming complexes with molecular oxygen in hemoglobin and myoglobin; these two compounds are common oxygen transport proteins in vertebrates.

Fe
55.845

Recommended Dietary Allowances (RDA):

Age	Male	Female	Pregnancy	Lactation
Birth to 6 months	0.27 mg*	0.27 mg*		
7-12 months	11 mg	11 mg		
1-3 years	7 mg	7 mg		
4-8 years	10 mg	10 mg		
9-13 years	8 mg	8 mg		
14-18 years	11 mg	15 mg	27 mg	10 mg
19-50 years	8 mg	18 mg	27 mg	9 mg
51+ years	8 mg	8 mg		

Morbidity

Percent of persons with iron deficiency (based on the body iron model):

- Children age 1-2 years: 14%
- Children age 3-5 years: 4%
- Females age 12-19 years: 9%
- Females age 20-49 years: 9%

Why do we need Iron?

- ☒ Hemoglobin Formation
- ☒ Muscle Function
- ☒ Restless Leg Syndrome
- ☒ Regulation of Body Temperature
- ☒ Oxygen Carrier
- ☒ Iron Deficiency Anemia
- ☒ Chronic Diseases
- ☒ Brain Function
- ☒ Neurotransmitter Synthesis
- ☒ Prevents Anemia
- ☒ Elimination of chronic fatigue
- ☒ Immune System
- ☒ Energy Metabolism
- ☒ Enzyme Systems
- ☒ Insomnia
- ☒ Help focus concentration and energy

! SIDEROPENIA or HYPOFERREMIA

- iron deficiency; the most common nutritional deficiency in the world.

Signs & Symptoms:

- ▲ fatigue
- ▲ weakness
- ▲ dizziness
- ▲ pica
- ▲ pallor
- ▲ brittle or grooved nails
- ▲ hair loss
- ▲ Plummer-Vinson syndrome
- ▲ twitches
- ▲ pagophagia
- ▲ irritability
- ▲ restless legs syndrome

Possible Causes:

- ▲ chronic bleeding
- ▲ inadequate dietary intake
- ▲ substances interfering with iron absorption
- ▲ malabsorption syndromes
- ▲ inflammation
- ▲ blood donation

10 OF THE BEST IRON RICH FOODS

- Egg Yolk
- Clams
- Potatoes
- Broccoli
- Oatmeal
- Strawberry
- Watermelon
- Spinach
- Dark Chocolate
- Beef

- Excess intake can lead to liver damage, abdominal pain, nausea, and diarrhea. Excess intake can also reduce the absorption of zinc.

Good Sources: Beef liver, oysters, potatoes, mushrooms, sesame seeds, sunflower seeds.

j) **Selenium:**

Selenium plays a crucial role in reproductive and thyroid health, and as an antioxidant can prevent cell damage.

- Recommended intake is 55 mcg/ day for adults.
- Insufficient intake can lead to heart disease, infertility in men, and arthritis.
- Excess intake can lead to garlic breath, diarrhea, irritability, skin rashes, brittle hair and nails, and other symptoms.

Good Sources: Brazil nuts, spinach, oatmeal, baked beans, tuna, ham, and enriched macaroni.

2. **Vitamins:**

Everyone needs small amounts of various vitamins. Some vitamins (like Vitamin C) are also antioxidants that protect cells from damage by removing toxic molecules (called free radicals). There are two types of vitamins:

- A) Water-Soluble- the eight B vitamins and Vitamin C, and
- B) Fat-Soluble- Vitamin A, D, E, and K.

- A) **Water-Soluble** vitamins need to be consumed regularly because the body removes them more quickly without storing them.

7 BRAIN BOOSTING NUTRIENTS

1	DHA Numerous studies link high levels of DHA with a decreased risk for dementia, Alzheimer's & other brain diseases.	Take about 1,000 mg a day.
2	RESVERATROL Fights aging, promotes heart health & stimulates brain function. It's also a key ally of the immune system.	Take 100mg twice daily.
3	TURMERIC An anti-inflammatory & antioxidant that protects our mitochondria & improves glucose metabolism, which are essential for reducing risk for brain disease.	Take 350mg twice daily.
4	PROBIOTICS Food rich in probiotics can influence brain behavior, & may modulate the effects of stress, anxiety, & depression.	Take 10 billion active cultures from at least ten different strains.
5	COCONUT OIL A healthy medium-chain fatty acid that fuels the brain - but without an insulin spike. Studies have shown it may help reverse Alzheimer's.	Take at least 1 tablespoon of organic cold-pressed oil a day.
6	ALPHA-LIPOIC ACID A powerful antioxidant that works to protect brain & nerve tissue.	Take 600 mg/day.
7	VITAMIN D Supports optimal brain health & addresses mental & psychological health problems.	Take at least 5,000 IU+ of D3 daily.

Source: David Perlmutter MD, FACN, ABIHM

n	Effect of too little	Effect of too much	Sources
B-1 (thiamin)	Beriberi Wernicke-Korsakoff syndrome	Unclear, as the body excretes it in the urine.	Fortified cereals and rice, pork, trout, black beans
B-2 (riboflavin)	Hormonal problems, skin disorders, swelling in the mouth and throat	Unclear, as the body excretes it in the urine.	Beef liver, breakfast cereal, oats, yogurt, mushrooms, almonds
B-3 (niacin)	Pellagra, including skin changes, red tongue, digestive, and neurological symptoms	Facial flushing, burning, itching, headaches, rashes, and dizziness	Beef liver, chicken breast, brown rice, fortified cereals, peanuts.
B-5 (pantothenic acid)	Numbness and burning in hands and feet, fatigue, stomach pain	Digestive problems at high doses.	Breakfast cereal, beef liver, shiitake mushroom, sunflower seeds
B-6 (pyridoxamine , pyridoxal)	Anemia, itchy rash, skin changes, swollen tongue	Nerve damage, loss of muscle control	Chickpeas, beef liver, tuna, chicken breast, fortified cereals, potatoes
B-7 (biotin)	Hair loss, rashes around the eyes and other body openings, conjunctivitis	Unclear	Beef liver, egg, salmon, sunflower seeds, sweet potato
B-9 (folic acid , folate)	Weakness, fatigue, difficulty focusing, heart palpitations, shortness of breath	May increase cancer risk	Beef liver, spinach, black-eyed peas, fortified cereal, asparagus
B-12 (cobalamins)	Anemia, fatigue, constipation, weight loss, neurological changes	No adverse effects reported	Clams, beef liver, fortified yeasts, plant milks, and breakfast cereals, some oily fish.
Vitamin C (ascorbic acid)	Scurvy, including fatigue, skin rash, gum inflammation, poor wound healing	Nausea, diarrhea, stomach cramps	Citrus fruits, berries, red and green peppers, kiwi fruit, broccoli, baked potatoes, fortified juices.

<https://www.medicalnewstoday.com/articles/160774>

- B) **Fat-Soluble** vitamins get absorbed through your intestines with the help of fat (lipids). The body can store these vitamins and does not remove them as quickly, but with a low-fat diet, you may not absorb enough of these vitamins.

Vitamin	Effect of too little	Effect of too much	Sources
Vitamin A (retinoids)	Night blindness	Pressure on the brain, nausea, dizziness, skin irritation, joint and bone pain, orange pigmented skin color	Sweet potato, beef liver, spinach, and other dark leafy greens, carrots, winter squash
Vitamin D	Poor bone formation and weak bones	Anorexia, weight loss, changes in heart rhythm, damage to cardiovascular system and kidneys	Sunlight exposure plus dietary sources: cod liver oil, oily fish, dairy products, fortified juices
Vitamin E	Peripheral neuropathy , retinopathy, reduced immune response	May reduce the ability of blood to clot	Wheatgerm, nuts, seeds, sunflower and safflower oil, spinach
Vitamin K	Bleeding and hemorrhaging in severe cases	No adverse effects but it may interact with blood thinners and other drugs	Leafy, green vegetables, soybeans, edamame , okra, natto

<https://www.medicalnewstoday.com/articles/160774>

Antioxidants:

Some nutrients act like antioxidants in the body to eliminate free radicals. Antioxidants can be vitamins, minerals, proteins, or other types of molecules. They help the body remove toxic substances because if too many remain in your body, it can lead to cell damage and disease.

Fact or Fiction: Everyone should follow Canada's Food Guide.

Fiction. All humans are unique as individuals. Everyone has differences in digestion, metabolism, allergies, body type, physical activity levels, and environment can affect which diet you can follow for the long-term.

Some people do better on a vegetarian diet, while others thrive on a keto diet. You need to find a way of eating that works for you and your body for the long-term. The best way is to try different diets, if they do not work for you, then move on and find one appropriate for you. If it does not work for the long-term, then you end up yo-yo dieting, which will have emotional, psychological, and physical drawbacks, so keep trying.

The key is to eat a variety of fruits and vegetables from various colours at each meal and for snacks. Eat natural, unprocessed foods and try to avoid prepackaged, high fat, high sodium foods.



When diet is wrong

Medicine is of no use.

When diet is correct

Medicine is of no need.

Ancient Ayurvedic Proverb

To start follow the link below to get some information on the various diets available scroll bout ½ way down): <https://www.medicalnewstoday.com/articles/160774#summary>

For Information on a Heart Healthy Diet:

<http://www.nshealth.ca/sites/nshealth.ca/files/patientinformation/1887.pdf>

Canada's New Food Guide, Tips and Tricks for Healthy Eating:

<https://food-guide.canada.ca/en/>

Numerous Health Issues addressed with Nutritional Advice:

<https://eatwellnovascotia.com/category/nutritional-advice/>

FAQ and Answers related to Supplements:

<https://www.unlockfood.ca/en/Articles/Vitamins-and-Minerals/Vitamins-and-Minerals-FAQs.aspx>

Healthy Eating in Recreation and Sport Settings Guidelines:

<http://www.rfans.com/wp-content/uploads/2016/08/FINAL-HERSS-Guidelines-v0-3.pdf>

Nutrition for Mental Health:

<https://www.ementalhealth.ca/Nova-Scotia/Nutrition-for-Mental-Health-Information-for-Adults/index.php?m=article&ID=56669>

Canadian Nutrition Society has numerous webinars for free on a variety of nutritional topics:

<https://cns-scn.ca/education-portal>

Dieticians of Canada Free Resources and Recipes:

<https://www.dietitians.ca/Advocacy/Nutrition-Month/Nutrition-Month-2021>

How to Read and Understand Nutritional Fact Labels:

<https://www.canada.ca/en/health-canada/services/understanding-food-labels/nutrition-facts-tables.html>

Details on how to read food labels and Canada's Food Guide explore the following link:

<https://www.canada.ca/en/services/health/food-nutrition.html>

References:

<https://www.canada.ca/en/health-canada/services/understanding-food-labels/calories.html>

https://www.healthline.com/nutrition/top-10-nutrition-facts#TOC_TITLE_HDR_10

<https://www.medicalnewstoday.com/articles/160774>

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<https://www.who.int/health-topics/nutrition>

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