

College of
Health & Human Sciences



Four Nutrients of Concern for All Americans

*Christine Medin, Undergraduate Student
(Nutrition & Dietetics),
Department of Health & Human Sciences,
Purdue University*

*Heather A. Eicher-Miller, PhD; Assistant Professor,
Department of Nutrition Science,
Purdue University;
Director, Indiana's Emergency Food Resource Network*

The Dietary Guidelines for Americans (DGA) for 2015-2020 tells us that people in the U.S. do not consume enough dietary fiber, vitamin D, calcium, and potassium. By labeling those four as nutrients of concern, the DGA seeks to raise awareness. Adding those nutrients to diets can decrease the risk of heart disease, cancer, and other diet-related diseases.

Most adults eat too much saturated fats, sodium, and sugar and not enough foods that contain nutrients of concern — dairy, fruit, vegetables, and whole grains (Figure 2.1).

A closer look at the nutrients of concern will show why they are so important, what foods they are in, and how much is needed to keep a person healthy.

Dietary fiber is a carbohydrate found in plant-based foods. Dietary fiber is made of soluble fiber and insoluble fiber — the parts of the plant that cannot be easily digested by humans.

Soluble fiber slows the time it takes food to move through the gastrointestinal tract. It prevents blood sugar levels from getting too high and from falling too quickly. That makes foods containing soluble fiber excellent choices for pre-diabetics and diabetics.

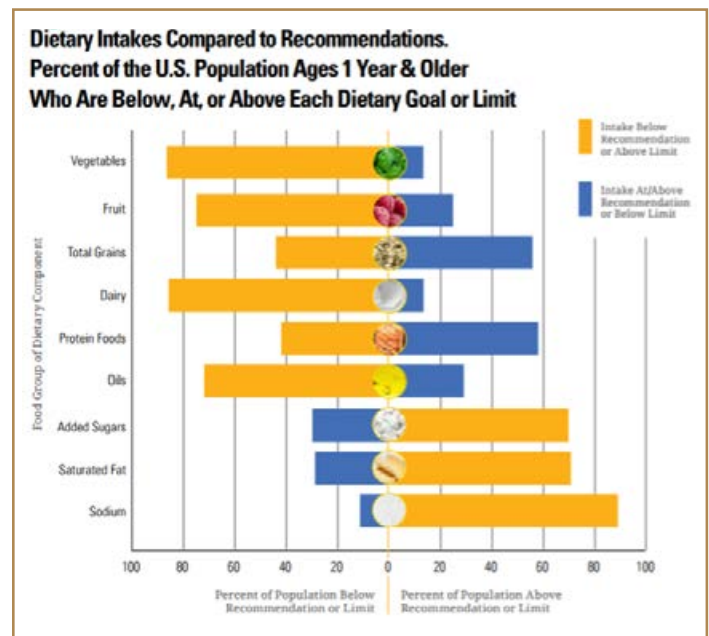


Figure 2.1

► Functions of Soluble Fiber

- Decreases low-density lipoprotein (LDL)
- Decreases serum cholesterol
- Helps maintain a steady blood sugar level

Insoluble fiber stays whole as it passes through the body, thereby helping food move through the digestive tract smoothly and quickly.

Daily Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes & Dietary Guidelines Recommendations

Source of Goal	Child 1-3	Female 4-8	Male 4-8	Female 9-13	Male 9-13	Female 14-18	Male 14-18	Female 19-30	Male 19-30	Female 31-50	Male 31-50	Female 51+	Male 51+	
Calorie Level(s) Assessed	1,000	1,200	1,400, 1,600	1,600	1,800	1,800	2,200, 2,800, 3,200	2,000	2,400, 2,600, 3,000	1,800	2,200	1,600	2,000	
Dietary Fiber, g	14 g/ 1,000 kcal	14	16.8	19.6	22.4	25.2	25.2	30.8	28	33.6	25.2	30.8	22.4	28

► **Functions of Insoluble Fiber**

- Adds bulk to the stool and promotes easier bowel movement
- Prevents constipation
- Increases the number and regularity of bowel movements

Eating foods with soluble and insoluble fiber can help you feel full and satisfied during mealtime. Fiber-rich foods can help you avoid overeating and control meal portions. This is why fiber-rich foods are great if you are trying to reach a healthy weight.

Vitamin D is a fat-soluble vitamin that is activated in the body when bare skin is exposed to the sun. You can get this vitamin by taking supplements, or by eating foods that are either fortified or have vitamin D naturally found in them.

The right amount of vitamin D for you may vary depending on age, health status, and skin pigmentation. These can affect how much vitamin D is absorbed or created in your body.

You might want to consider adding foods rich in vitamin D into your diet if at least one of these conditions apply:

- You work in an area with little sunlight;

- You live in a cloudy climate or region far from the equator; or
- You get limited sun during the winter months.

► **Functions of Vitamin D**

- Lessens inflammation
- Boosts immune responses
- Regulates growth of cells
- Supports healthy bone repair and growth

Calcium is the most abundant mineral in the body. Most of this essential mineral is stored within the skeleton, especially in teeth and bones. Calcium can also be found in the bloodstream, where its level is tightly controlled.

Children and teens have high calcium needs compared to adults who have already reached their full growth or maturity, often called peak bone mass. Calcium is also very important to the elderly, who are at increased risk for fractures and osteoporosis.

Differences in age, growth and development may alter how much calcium is right for you.

► **Functions of Calcium**

- Provides a building block for bones
- Helps hormone balance
- Plays a role in nerve signaling
- Maintains healthy blood flow
- Promotes muscle contraction

Daily Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes & Dietary Guidelines Recommendations

	Source of Goal ^(a)	Child 1-3	Female 4-8	Male 4-8	Female 9-13	Male 9-13	Female 14-18	Male 14-18	Female 19-30	Male 19-30	Female 31-50	Male 31-50	Female 51+	Male 51+
Calorie Level(s) Assessed		1,000	1,200	1,400, 1,600	1,600	1,800	1,800	2,200, 2,800, 3,200	2,000	2,400, 2,600, 3,000	1,800	2,200	1,600	2,000
Vitamin D, IU	RDA	600	600	600	600	600	600	600	600	600	600	600	600 ^(c)	600 ^(c)

Daily Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes & Dietary Guidelines Recommendations

	Source of Goal ^(a)	Child 1-3	Female 4-8	Male 4-8	Female 9-13	Male 9-13	Female 14-18	Male 14-18	Female 19-30	Male 19-30	Female 31-50	Male 31-50	Female 51+	Male 51+
Calorie Level(s) Assessed		1,000	1,200	1,400, 1,600	1,600	1,800	1,800	2,200, 2,800, 3,200	2,000	2,400, 2,600, 3,000	1,800	2,200	1,600	2,000
Calcium, mg	RDA	700	1,000	1,000	1,300	1,300	1,300	1,300	1,000	1,000	1,000	1,000	1,200	1,000 ^(b)

Daily Nutritional Goals for Age-Sex Groups Based on Dietary Reference Intakes & Dietary Guidelines Recommendations

Source of Goal ^(a)	Child 1-3	Female 4-8	Male 4-8	Female 9-13	Male 9-13	Female 14-18	Male 14-18	Female 19-30	Male 19-30	Female 31-50	Male 31-50	Female 51+	Male 51+
Calorie Level(s) Assessed	1,000	1,200	1,400, 1,600	1,600	1,800	1,800	2,200, 2,800, 3,200	2,000	2,400, 2,600, 3,000	1,800	2,200	1,600	2,000
Potassium, mg	AI	3,000	3,800	3,800	4,500	4,500	4,700	4,700	4,700	4,700	4,700	4,700	4,700

Potassium is an essential mineral and electrolyte in the body.

Just as with other nutrients, potassium needs may vary based on age, gender, and other factors. Excessive physical activity, sweating, or diarrhea can increase your potassium needs.

► **Functions of Potassium**

- Helps maintain heartbeat
- Assists in muscle contraction
- Promotes nerve signaling
- Lessens the action of sodium on blood pressure
- Regulates pH, water, and electrolyte levels in the blood.

The New Nutrition Labels

The picture below shows the changes in nutrient-of-concern information on food labels. Recent nutrition label policies require food labels to have the following:



- The percentage of the nutrient value when compared to total dietary needs for the day.
- The amount of vitamin D, calcium, and potassium, and added sugars within a packaged food.
- A more realistic serving size
- A bigger font size in some sections of the label (total calories, serving size, etc.)

The changes make it easier to refer to the Dietary Guidelines recommendations and track your nutrient intake throughout the day.

Although many major food companies have already adopted the new nutrition label, this label may not appear on all food packages for some time. The February 2017 newsletter on the [Indiana’s Emergency Food Resource Network website](#) shows the dates when companies must update their food labels.

Practical Ways to Add Nutrients of Concern to Your Diet

Here are some ideas for adding nutrients of concern to your diet while still on a budget.

1. Switch from high-calorie and nutrient-poor foods to foods that are wholesome and nutrient-dense.

Idea: Replace butter or cream cheese with avocados in salad dressing and dips
2. Choose processed foods that are nutrient-dense, enriched or fortified in order to increase their nutrient value. (Try to stay away from products that are nutrient-poor and high in saturated fat, salt, and/or sugar.)

Idea: Instead of soda or sweetened beverages, choose orange juice, milk or other dairy options.

3. Rinse off added salt, sugar, or high-fructose corn syrup found in canned goods for taste or preservation purposes.

Idea: Canned salmon, vegetables, and fruit have a stable shelf life. They often keep their nutritional value through their expiration date and are products to consider.

4. Select frozen produce when fresh produce prices are high in comparison, or when certain products cannot be found during winter months.

Idea: Add frozen mangoes in recipes (such as smoothies) if fresh mangoes are not in season.

As always, refer to nutrition labels and ingredient lists to make the most educated decisions when shopping. Review the Dietary Guidelines for Americans to stay up to date with the latest nutrition research and to make healthy choices.

Helpful Definitions

Pigmentation: Having to do with the color or hue of the skin. This can affect how much sunlight can be used to create vitamin D in the body.

Nutrient-dense foods: Foods that are rich in nutrient value when compared to the calories they offer. Examples include avocados, leafy green vegetables, eggs, milk, etc. Calorie-dense items with low nutrient value include soda, ice cream, candy, etc.

Enriched foods: Foods that have nutrients added to them that were lost during processing. Nutrients commonly replaced back into foods include B vitamins (folic acid, thiamin, riboflavin, and niacin) and iron. Cereals are often enriched, like flours and pastas.

Fortified foods: Foods that have nutrients added to them during processing that were never there to begin with. This also includes adding a larger amount of a nutrient than what was previously in the food naturally. Popular fortified foods include orange juice with calcium and milk with vitamin D.

Processed foods: Foods that have been changed in some way before reaching the consumer. Processed food includes products that are canned, frozen, or packaged. This definition even applies to fresh produce that has been washed before reaching the grocery store.

References

1. <https://health.gov/dietaryguidelines/2015/guidelines/chapter-2/a-closer-look-at-current-intakes-and-recommended-shifts/#underconsumed-nutrients>]

Dietary Fiber

2. <http://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/fiber/art-20043983?pg=2>
3. <http://www.accessdata.fda.gov/scripts/interactivenutritionfactslabel/dietary-fiber.html>

Vitamin D

4. <https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/>

Calcium

5. <https://ods.od.nih.gov/factsheets/Calcium-HealthProfessional/>

Potassium

6. <https://medlineplus.gov/potassium.html>
7. <https://medlineplus.gov/ency/article/002413.htm>

Additional Sources

8. <https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm>
9. <http://www.eatright.org/resource/food/nutrition/nutrition-facts-and-food-labels/avoiding-processed-foods>

Table A7-1:

<https://health.gov/dietaryguidelines/2015/guidelines/appendix-7/>

Nutrient of Concern	Units of Measurement	Foods that Provide Nutrient of Concern	Example of Food Source and Amount of Nutrient Provided
Dietary Fiber	Grams (g)	<p><i>Soluble Fiber:</i></p> <ul style="list-style-type: none"> -Oats -Flax-seed -Legumes (peas, lentils, beans, etc.) -Carrots -Fruits consumed whole (apples, citrus fruits, etc.) <p><i>Insoluble Fiber:</i></p> <ul style="list-style-type: none"> -Whole grains -Wheat bran -Nuts -Seeds -Vegetables (cauliflower, green beans, potatoes, etc.) 	½ cup of navy beans: 9.6 grams of fiber
Vitamin D	Micrograms (mcg or µg)	<ul style="list-style-type: none"> -Fatty fish (canned salmon, tuna, etc.) -Mushrooms exposed to UV rays (chanterelle, maitake, shiitake, portabella) -Fortified milks and nondairy alternatives -Egg yolks -Fortified cereals 	3 oz can of sockeye salmon: 17.9 micrograms (mcg) of vitamin D
Calcium	Milligrams (mg)	<ul style="list-style-type: none"> -Dairy products (milk, cheese, yogurt) -Leafy greens (collards, broccoli, kale, bok choy, etc.) -Beans/other legumes -Salmon -Sardines -Foods fortified with calcium (orange juice, non-dairy milk alternatives, and cereals) 	1 cup of low-fat 1% milk: 305 mg of calcium
Potassium	Milligrams (mg)	<ul style="list-style-type: none"> -White beans -Tomatoes -Figs -Dates -Apricots -Avocados -Spinach -Sweet potatoes -White potatoes -Mushrooms -Coconut water -Dairy products (milk, cheese, yogurt, etc.) -Salmon 	Medium baked potato: 941 mg of potassium

<https://health.gov/dietaryguidelines/2015/guidelines/appendix-7/#table-a7-1-daily-nutritional-goals-for-age-sex-groups-based-on-d>

Dietary Fiber Reference: <https://health.gov/dietaryguidelines/2015/guidelines/appendix-13/>

Vitamin D Reference: <https://health.gov/dietaryguidelines/2015/guidelines/appendix-12/>

Calcium Reference: <https://health.gov/dietaryguidelines/2015/guidelines/appendix-11/>

Potassium Reference: <https://health.gov/dietaryguidelines/2015/guidelines/appendix-10/>

July 2017

It is the policy of the Purdue University Cooperative Extension Service that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran.

Purdue University is an Affirmative Action institution. This material may be available in alternative formats.



Order or download materials from
Purdue Extension • The Education Store
www.edustore.purdue.edu