

Comparing the Cost of Essential Nutrients from Different Food Sources in the American Diet Using NHANES 2011–2014

Julie M. Hess, Christopher J. Cifelli, Sanjiv Agarwal and Victor L. Fulgoni III, *Nutrition Journal*. 2019;18:68. <https://nutritionj.biomedcentral.com/track/pdf/10.1186/s12937-019-0496-5>.

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Study Overview:

According to the 2015-2020 Dietary Guidelines for Americans, there are 10 “shortfall nutrients” that many Americans do not get enough of in their diets. Four of these nutrients – calcium, vitamin D, potassium and fiber – have been identified as “nutrients of public health concern” because their underconsumption has been linked to adverse health outcomes. This analysis of National Health and Nutrition Examination Survey data (NHANES 2011-2014) compared the cost of obtaining nutrients of public health concern from the various food groups to help identify cost-effective ways for Americans to move closer to healthy and sustainable eating patterns.

Milk and dairy were inexpensive sources of three of the four nutrients of public health concern (calcium, vitamin D and potassium), while grains were the least expensive source of fiber. Adding a serving of the lowest cost sources of the four nutrients of public health concern (milk, potatoes, sweet potatoes and quinoa) would only add \$0.81 per day for children and \$0.88 per day for adults and 350 calories.

This work reinforces the importance of consuming a variety of nutrient-rich foods for cost-effective, healthy and sustainable eating patterns.

Milk and dairy were the least expensive dietary sources of calcium and vitamin D in the American diet. Milk was also among the top 3 least expensive sources of potassium.



Least Expensive Sources of the Nutrients of Public Health Concern

Adults 19-99 Years Old

CALCIUM

- 1 Milk (dairy)
- 2 Cheese
- 3 Orange juice

VITAMIN D

- 1 Milk (dairy)
- 2 Eggs
- 3 Soy Milk

POTASSIUM

- 1 Potatoes & yams
- 2 Juice
- 3 Milk (dairy)

FIBER

- 1 Quinoa
- 2 Chickpeas
- 3 Pearled barley

Children 2- 18 Years

CALCIUM

- 1 Cheese & milk (dairy) (tie)
- 2 Orange juice

VITAMIN D

- 1 Milk (dairy)
- 2 Eggs
- 3 Fortified cereals

POTASSIUM

- 1 Potatoes & sweet potatoes
- 2 Juice
- 3 Milk (dairy)

FIBER

- 1 Quinoa
- 2 Chickpeas
- 3 Pearled barley

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On behalf of America's dairy farmers, NDC strives to help people thrive at every age through science-based information on dairy's contributions to nutrition, health and sustainable food systems.

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Cut Food Waste, Save Money

Sustainable diets should be both nutritionally adequate and affordable. Reducing food waste has both an economic and an environmental impact. Use these tips to make the most of milk, yogurt and cheese.



- Keep milk in the back of the fridge where it is the coldest.
- Freeze milk in ice cube trays to blend in smoothies, frappes or soups.
- Boost the nutrients in scrambled eggs and oatmeal by using milk instead of water.
- Brush milk on top of breads and pastry crusts before baking for a nicely browned crust.



- Lean into yogurt as a culinary powerhouse. It can serve as the backbone for dips, dressings, marinades and soups.
- Use plain yogurt instead of mayo on sandwiches.
- Whip up a flatbread crust with 1 cup of yogurt and 2 cups self-rising flour.
- Create a popsicle by blending yogurt with ripe fruit and freezing. Freezing can change the live and active cultures, but it won't significantly impact the nutritional value.



- Protect cheese by wrapping it in parchment paper and placing in a plastic bag or covering with plastic wrap and store in the fridge's vegetable drawer.
- If there is mold on any natural, hard, block cheeses, don't worry. It is not harmful and can easily be removed by cutting off at least an inch around the mold.
- Some softer cheeses can be frozen, especially when shredded.



Very Berry Overnight Oats

Makes 1 serving

Ingredients

¼ cup yogurt, low-fat plain
¼ cup milk, low-fat or fat-free
½ cup berries, frozen, unsweetened
1/3 cup oats, quick cooking, dry

Instructions

1. Combine all ingredients in a cup or jar. Stir to mix thoroughly. Cover and refrigerate several hours or overnight.
2. Top each cup with 1 oz. of plain yogurt and 1 Tbsp. berries.

References:

1. U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. December 2015. <http://health.gov/dietaryguidelines/2015/guidelines>
2. Hess, J.M., Cifelli, C.J., Argarwal, S., Fulgoni III, V.L. Comparing cost of essential nutrients from different food sources in the American diet using NHANES 2011–2014. Nutrition Journal. 2019.