Sylvia R. Karasu M.D.
The Gravity of Weight

# Nuts With Benefits

## What are some of the plausible effects on our health?

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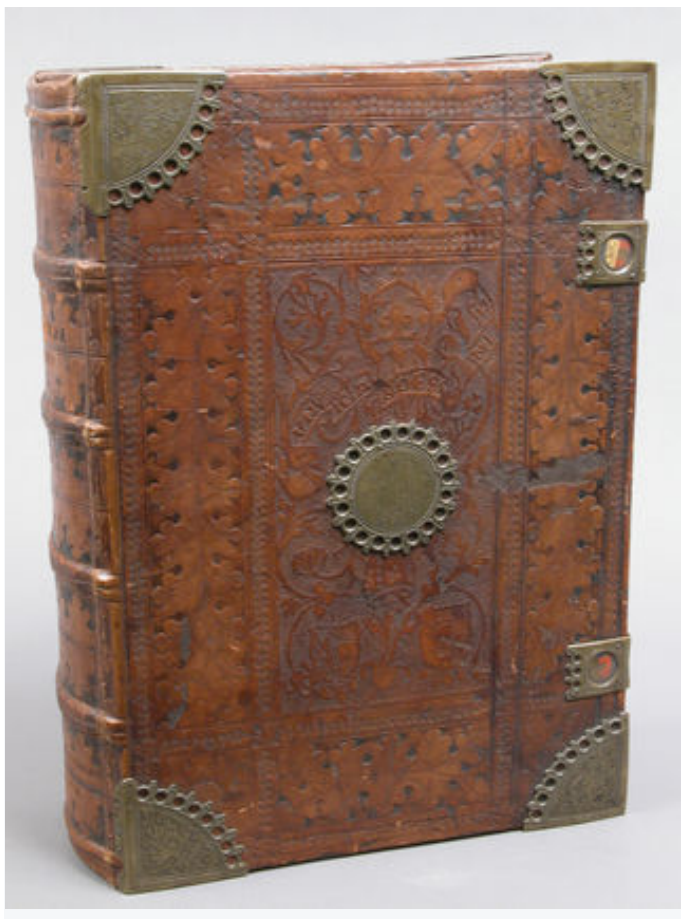
A jar of filberts, also called hazelnuts. Maybe the boy in Aesop's fable appreciated the benefits of eating nuts. Contributor: Grant Heilman Photography, Alamy Stock Photo.
Source: Used with permission, Alamy Stock Photo



A leather Bible, printed in 1477 and bound in 1478, from Nuremberg, Germany. Credit: Fletcher Fund, 1924, Metropolitan Museum of Art. References to nuts, predominantly almonds, but also one reference to pistachios, appear throughout the Bible.
Source: Metropolitan Museum of Art, NYC, Public Domain

"A boy puts his hand into a jar of filberts," so the Aesop's fable goes, "and grasps as many as his fist could possibly hold. But when he tried to pull it out again, he found he couldn't do so, for the neck of the jar was too small to allow the passage of so large a handful." A bystander chides the boy for being too greedy and suggests that he will be able to remove his hand if he can be satisfied with only half the amount. The story is a familiar one, with a moral, "Do not attempt too much at once."

For some, though, grabbing as many nuts as possible may not reflect greed: it may indicate a superior knowledge of the health benefits of nuts. What do we know about how nuts fit into our diet?

Nuts, particularly pistachios and almonds, say Allison and his colleagues, have been consumed since biblical times, and references appear in *Genesis* (Lewis et al, *American Journal of Clinical Nutrition*, 2014) and throughout the Bible. (https://bible.knowing-jesus.com/topics/Almonds) Though eaten for centuries, they were much maligned and considered "undesirable" due to their high-fat content from the mid-1950s until the mid-1990s. (Lewis et al, 2014) In recent years, though, we have begun to appreciate that not all fat is equal, and nuts may have plausible health benefits. Tree nuts include walnuts, hazelnuts (filberts), pecans, almonds, pistachios, cashews, Brazil nuts, and macadamia nuts. Peanuts are technically not nuts, but legumes. (For more on peanuts and their allergic potential specifically, see one of my previous blogs, *The Brittle World of Peanut Allergy.*)

Nuts are all "nutrient dense," and depending on the particular nut, contain different levels of healthy monounsaturated (mostly oleic) and polyunsaturated fatty acids (mostly linoleic), and low levels of saturated fats, as well as protein, soluble and insoluble fiber, vitamins E and K, folate, thiamine, minerals such as magnesium, copper, potassium, and selenium, and antioxidants. (De Souza et al, *Nutrients*, 2017) For example, walnuts have the highest level of polyunsaturated fatty acids. (Kim et al, *Nutrients*, 2017); almonds have the highest fiber of the tree nuts, and peanuts have the most protein and fiber. (De Souza et al, 2017) Even cashews, which initially had been exempt from health claims made by the FDA in the early 2000s because they "exceeded the disqualifying amount of saturated fatty acids," have been exonerated because a third of their saturated fat comes from stearic acid, now considered "relatively neutral" on blood lipids. And the majority of fat

Luiz Meléndez, "Still Life with Oranges and Walnuts," 1772, on view in the National Gallery, London. Nuts were often the subject of still life paintings for artists.
Source: National Gallery, UK, used with permission

Georg Flegel, "Still Life with Siegburger Stoneware, a Jar, a Glass, a Knife, Two Breads, Three Pewter Dishes with Hazelnuts, Seafood, and Apples," 17th century. Source: Hampel Auctions.
Source: Wikimedia Commons/Public Domain

Photo of controversial researcher Ancel Keys, 1950, from the University of Minnesota, where Keys did some of his groundbreaking work on human starvation during World War II. Years later, Keys performed "seminal" research linking diet to cardiovascular health.
Source: Wikipedia/Archives of the University of Minnesota/Public Domain

(60%) in cashews is monounsaturated (primarily oleic acid.) (Mah et al, *American Journal of Clinical Nutrition*, 2017) (For a comprehensive review of the nutrient contents of different raw nuts, see Kim et al, 2017)

Further, because of their high fiber content, nuts take more work to chew and digest (i.e., may enhance calorie expenditure) and may even act as an appetite suppressant (i.e., decrease food intake from other sources due to their satiating quality.) A review of 21 studies demonstrated no weight gain from consumption of various nuts, and "under most circumstances," nuts can be added (or at least substituted for other foods) in a diet without significant weight change. (Kim et al, 2017) The way, though, that nuts are processed can change the amount of calories absorbed. For example, there are fewer calories in natural, roasted, or chopped almonds than in almond butter, and whole, natural almonds (without additional oil or salt) are the healthiest. (Gebauer et al, *Food & Function*, 2016) Further, not only can processing "differentially impact" the number of calories available, but studies now show that the degree of almond processing can change the ratios of bacteria in our gastrointestinal microbiome. (Holscher et al, *Nutrients,* 2018) Even without processing, in one small study, 42 grams (about one and one-half ounces) of walnut halves changed these ratios. (Holscher et al, *Journal of Nutrition*, 2018)

The notion that nuts can be part of a healthy diet grew out of a belief that a Mediterranean-style diet, which incorporates fresh fish, vegetables and fruits, grains, olive oil, wine, legumes, and nuts, may be cardio-protective. Researchers are especially interested to find connections between diet and cardiovascular disease (CVD) since CVD is the "primary global cause" of death, with 17 million deaths attributed to CVD each year. (Mattioli et al, *Journal of Cardiovascular Medicine*, 2017.) This type of diet had been systematically studied by Ancel Keys in the late 1950s, in his now classic *Seven Countries Study.* Keys' methodology had been criticized in the media in recent years, but researchers do believe Keys' work remains a "seminal study" and was a "first step" in exploring the important relationship of diet to cardiovascular health. (Menotti and Puddu, *Current Opinion in Lipidology,* 2018; see also Pett et al at: https://www.truehealthinitiative.org/wordpress/wp-content/uploads/2017/0... for a thorough discussion refuting criticisms of Keys' and his *Seven Countries Study*.)

Since Keys' original study, there have been countless scientific reports on the relationship of diet, including eating nuts specifically, to health, but research in this area can be problematic. For example, when considering the effect of diet on the heart, there are such "long induction periods" for cardiovascular disease to manifest itself that short-term randomized controlled studies cannot necessarily capture a "dietary etiology." (Satija and Hu, *Trends in Cardiovascular Medicine,* 2018). Casazza and Allison (*Clinical Obesity*, 2012) emphasize that researchers must give "careful consideration" to *what is and is not* known, and exactly what the "evidence base actually shows."

Power figure: Male (Nkisi), 19th-to-mid-20th century from the Democratic Republic of Congo, made of many materials, including nuts. Credit: Michael C. Rockefeller Memorial Collection, Bequest of Nelson A. Rockefeller, 1979. Metropolitan Museum of Art, NYC. Nuts have been eaten since biblical times, but also used as a medium in art. Source: Metropolitan Museum of Art, Public Domain, used for scholarly purposes

Giuseppe Arcimboldo, "Autumn," 1573, Louvre Museum, Paris. Arcimboldo was famous for incorporating foods, animals, and household objects into his paintings. This painting is part of his "Seasons" group.
Source: Wikimedia Commons/Public Domain

What we actually know can be difficult to assess. Not only is it important to consider and control for the so-called "background diet" (Neale et al, *British Medical Journal*, 2017) of the participants, namely what else they may be eating during the study, but also to isolate one component behavior, such as eating nuts, from other healthy behaviors a participant may engage in. For example, Hu and Willett (Bao et al*, NEJM*, 2013), in their study of over 76,000 nurses and over 42,000 male health professionals, exploring the relationship of mortality among men and women who eat nuts, found those who consumed nuts were more likely leaner, less likely to smoke, more likely to exercise, eat more fresh fruits and vegetables, take multivitamin supplements, and drink more alcohol. Further, they noted reverse causality had to be considered, namely, that those with chronic illness or in poorer health may refrain from eating nuts. Though their study involved 30 years of follow-up and did indicate a 20% lower death rate in those consuming nuts seven or more times a week, they noted nut consumption, like so many studies of diet, was recorded by potentially (and notoriously) inaccurate self-report, and no data were collected on how nuts were prepared. And they acknowledged that their population was a specific one consisting of those in the health professions and may not generalize to other populations. (Bao et al, 2013)

In more recent years, Eslamparast et al (*International Journal of Epidemiology,* 2016) studied nut consumption and its possible relationship to mortality, but in a population, in northeastern Iran, "whose nut consumption does not track with a healthy lifestyle." They, as well, used self-report, with over 50,000 participants, and a median of 7 years of follow-up. Those women who ate nuts three or more times a week (28 grams, about an ounce) had a 51% lower risk of death, though men had only a 16% lower risk, but the researchers acknowledge that since their study was observational, they, as well, cannot assume causality.

Perhaps one of the most important (and reasonably consistent) findings about the benefit of nut consumption is its effect on cholesterol levels (total cholesterol and LDL, or so-called “bad” cholesterol) which, when elevated, are a major factor in the development of cardiovascular disease. A study by Berryman et al, *Journal of Nutrition*, 2017; and systematic reviews by Afshin et al*, American Journal of Clinical Nutrition*, 2014; Kim et al, 2017; and Del Gobbo et al*, American Journal of Clinical Nutrition*, 2015, have all found nut consumption can lower total cholesterol and LDL levels significantly. And it seems it is the *quantity of nut intake (i.e., dose-related) rather than any specific nut itself.* (Asgary et al, *Journal of the American College of Nutrition*, 2018) For example, one trial reviewed by Del Gobbo et al (2015) found those who ate 100 grams (slightly more than 3 and 1/2 ounces) of nuts a day lowered their LDL cholesterol by up to 35 mg/dL.

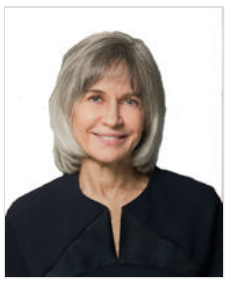
Researchers have also examined the relationship between nut consumption and inflammatory and endothelial function (Neale et al, 2017), as well as with hypertension, stroke, and diabetes (Zhou et al, *American Journal of Clinical Nutrition*, 2014; Luo et al, *American Journal of Clinical Nutrition,* 2014), but these results are less conclusive. A very recently published prospective study of over 61,000 Swedish participants, with up to 17 years of follow-up, was also cautious in suggesting that nuts may "play a role" in reducing a risk for atrial fibrillation

and "possibly" heart failure, but not with myocardial infarction, for example, once the researchers adjusted for "multiple risk factors" and other healthy behaviors of their subjects. Furthermore, this study also used self-report data. (Larsson et al, *Heart,* 2018)

The boy in Aesop's fable would have difficulty removing his hand if he greedily grabbed all the nuts from the small neck of this jar, but in this case, here are walnuts, not filberts.
Source: Featurepics/stock image, used with permission

*Bottom line:* In their editorial summarizing several of these studies, Allison and his colleagues (Lewis et al, 2014) concluded “with reasonable confidence” that nut consumption is associated with a reduced risk of coronary artery disease, but not with a risk of stroke or all-cause mortality, and from the studies they reviewed, they could not make conclusions about the relationship to diabetes. All in all, though conclusions about causation “would be premature,” all nuts seem to have benefits, particularly for certain aspects of cardiovascular health, and it makes sense to incorporate them into our diet. (Lewis et al, 2014) Eating more nuts is associated with lower cholesterol levels and in general, nut consumption is not necessarily associated with weight gain, usually because it creates satiety and less intake of other foods. Incorporate nuts into your diet, but not at the expense of increasing your daily caloric intake. So everything in moderation, and like the moral of Aesop's fable, don't attempt too much at once!

## About the Author



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