

# Health Concerns with Eggs

PhysiciansCommittee  
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There are several reasons to consider eliminating eggs from your diet. Recent studies link them to heart disease, diabetes, and even cancer.<sup>1,2</sup>

More than 60 percent of calories from eggs come from fat—a large portion of which is saturated fat. An average-sized egg also contains 186 milligrams of cholesterol.<sup>3</sup> Those with high cholesterol, diabetes, or cardiovascular disease are advised to limit their daily intake to less than 200 milligrams.<sup>2,4</sup> Since the body already produces more than enough cholesterol, it is not necessary to consume any dietary cholesterol. Eggs also lack fiber, one of the most important nutrients for long-term health.

## Heart Disease

Cholesterol and saturated fat contribute to the link between egg consumption and heart disease. Decades of research indicate that eating high-cholesterol foods (like eggs) is linked to increased blood cholesterol levels and heart disease, despite what advocates for low-carbohydrate, high-fat diets might argue.<sup>5-8</sup> The confusion arises when you look at the effect of adding cholesterol-heavy foods to the diets of those already eating a high-cholesterol diet. This makes minimal difference in their blood cholesterol levels. They are already at a high risk for heart disease, and adding more eggs makes a marginal difference in their risk. However, when on a low-cholesterol diet, there is a clear response between increased cholesterol consumption, blood cholesterol levels, and risk for heart disease.<sup>9</sup> When blood levels of cholesterol are high, it's easier for the walls of the blood vessels to thicken and restrict blood flow to organs like the heart and brain.

New research also suggests that a byproduct of choline, a nonessential nutrient found in eggs, increases the risk for a heart attack or stroke.<sup>10</sup> When a person eats eggs, gut bacteria break down the choline, releasing a toxic compound called trimethylamine oxidase (TMAO) into the blood stream.



All these factors contribute to cardiovascular problems. A review that combined the results of 14 research studies found that people who frequently eat eggs increased their risk for heart disease and stroke. For people who already have diabetes, the risk of developing heart disease is even higher with regular egg consumption.<sup>1</sup> Another study found that individuals who eat more than seven eggs a week have an 80 percent higher coronary artery calcium scores, a measure of heart disease risk. The link is strongest for people who eat fewer vegetables and have higher body weights.<sup>11</sup>

High cholesterol is also linked to health problems such as breast cancer, joint pain and inflammation, and infertility.<sup>12-15</sup> Lastly, it's impossible to consume cholesterol from a food without also consuming the saturated fat that comes with it. Excess saturated fat increases cholesterol levels and puts a person at higher risk for poor health outcomes in the long run.<sup>16,17</sup>

## Diabetes

High levels of cholesterol and saturated fat strongly link egg consumption and diabetes risk. Eating a diet high in fat can contribute to insulin resistance, as the fat interferes with insulin's ability to bring glucose from the blood into the cells.<sup>18</sup>

A review of 14 studies published in the journal of *Atherosclerosis* showed that those who consumed the most eggs increased their risk for diabetes by 68 percent.<sup>1</sup> Another review found similar results: a 39 percent higher risk of diabetes in people who eat three or more eggs per week in the United States.<sup>19</sup>

In the Physicians' Health Study I, which included more than 21,000 participants, researchers found that those who consumed seven or more eggs per week had an almost 25 percent higher risk of death than those with the lowest egg consumption. For participants with diabetes, the risk of death was twofold compared with those who ate the least amount of eggs.<sup>20</sup>

Egg consumption also increases the risk of gestational diabetes, according to two studies referenced in the *American Journal of Epidemiology*. Women who consumed the most eggs (more than seven a week) had a 77 percent increased risk of diabetes in one study and a 165 percent increased risk in the other, compared with those who consumed the fewest (less than one a week).<sup>21</sup>

## Cancer

Eating eggs may increase the risk for certain types of cancer such as colon, rectal, bladder, prostate, and breast cancer.<sup>22,23</sup> Research suggests TMAO promotes the growth of cancer, and specifically increases the risk for breast, ovary, and prostate cancer.<sup>22-24</sup>

It also makes the digestive tract especially vulnerable to cancer. Unfortunately, the risk exists for even small amounts of eggs—eating just 1.5 eggs per week can lead to nearly five times the risk for colon cancer compared to less than 11 eggs per year.<sup>25</sup> A more recent review of 37 studies confirmed these findings—the more eggs a person eats, the higher their risk for cancer of the digestive tract.<sup>23</sup> Not only does the risk for cancer increase with egg consumption, but also the risk for dying from colon and rectal cancer.<sup>26</sup> Similarly, even moderate egg consumption can triple the risk of developing bladder cancer.<sup>27</sup>

A 2011 Harvard study funded by the National Institutes of Health found that eating eggs is linked to developing prostate cancer. By consuming 2.5 eggs per week, men increased their risk for a lethal form of prostate cancer by 81 percent, compared with men who consumed less than half an egg per week.<sup>28</sup> The high levels of cholesterol and choline in eggs may be the cause.<sup>29</sup>

## Egg Whites

Egg whites are not necessary for adequate protein intake. In fact, most people consume far too much protein, specifically from animal sources such as egg whites. High protein diets are linked with kidney disease, kidney stones,<sup>15</sup> some types of cancer, and overall higher risk of mortality.<sup>30,31</sup> Plant sources of protein are a safer choice and have the added benefit of fiber, vitamins, minerals, antioxidants, and phytochemicals, all of which promote long-term health.

## Substitutions

Eggs are sometimes included in recipes for binding, leavening, and adding moisture. However, there are simple replacements, such as ground flaxseeds or applesauce. Foods like tofu and beans can even take the place of eggs to create delicious dishes such as tofu scramble or garbanzo bean eggless salad.

Swapping eggs for plant-based foods, not only reduces intake of cholesterol, saturated fat, and animal protein, but increases the amount of fiber, antioxidants, vitamins, minerals, and phytochemicals. This change can lead to long-term health benefits.

## Egg Substitutions for Cooking and Baking<sup>32</sup>

Alternative (equal to 1 egg)	Best In...	Tips
1 tablespoon chia seed or ground flaxseed	Whole-grain baked goods	Mix 1 tablespoon chia or ground flax with 3 tablespoons water and use as you would an egg. These are great sources of omega-3 fats.
1/2 banana, ripe and mashed	Baked goods	Use in sweet dishes in place of eggs or oil. This will add moisture to the dish.
1/4 cup applesauce or fruit	Baked goods	Use in sweet dishes in place of eggs or oil. This will add moisture to the dish.
1/2 cup silken tofu	Baked goods, creamy sauces, pie fillings	Be sure to differentiate between soft and firm tofu.
1/2 cup firm tofu	Patties, scrambles, sandwiches, fried rice/stir-fries	Firm tofu has a texture similar to a scrambled egg.
2 tablespoons corn starch/corn flour/wheat flour	Gravy, sauces, soups, stews, puddings	Good for thickening. To avoid lumps, mix with a small amount of cool water before adding to a hot liquid.
2 tablespoons arrowroot powder	Gravy, sauces, soups, stews, puddings	Dissolves easily and is good for thickening.
Commercial egg replacer	Baked goods	Follow instructions on the package.
Vegan Egg	Baked goods, scrambles	Available at most health food stores and packaged in a small “egg carton.” Follow instructions on the package.
Black Salt or “Kala Namak”	Scrambles	Contributes a sulfur/egg flavor to scrambles or other dishes.

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