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FREE WITH YOUR DAILY NATION

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Go on, have some more egg

Observational studies in the '60s and '70s led to the belief that eggs are harmful to health because they contain cholesterol. Subsequent studies have proved that this is false, so let's enjoy this nutritious food

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Let's kill the myth about eggs

Initially, eggs were viewed as a nutritional powerhouse, full of high-quality protein and a host of vitamins and minerals. Then it was considered a cholesterol-laden 'poison pellet' and a major factor in increased risk of coronary heart disease. Many people still hold this view, despite scientific proof to the contrary. It's time we focused more on what's been proved than assumptions.

**BY DR JOSHUA ARIMI
AND BETTY ITHALIE**

If there is one food the public has been confused about, it must be eggs. Before nutrition science became popular in the 1960s, eggs were touted as a superfood, rich in high-quality proteins, as well as a number of vitamins and minerals. Then in the 1960s and 70s, when nutrition science was in its nascent stages, it was discovered that high blood cholesterol was associated with coronary heart disease and stroke. This led to the belief that eating cholesterol-rich foods automatically led to an increase in blood cholesterol, which would clog the arteries and affect blood flow, eventually leading to death through heart attack. Science and the media picked up this argument and blacklisted all foods rich in cholesterol. Since eggs are rich in cholesterol, they were among the affected foods. In fact, health organisations warned consumers to limit their consumption of eggs because of the belief that they increased the risk of heart attack and stroke. Thus from the 1980s to early the 2000s, food manufacturers made it a point to label their products cholesterol-free.



After studies showed that eating eggs does not lead to heart disease, the American Heart Association reviewed its dietary recommendation of 1970 that advocated for the consumption of no more than three to four eggs a week and increased the number to seven.

- Dr Joshua Arimi, lecturer in food science.

2 How much cholesterol does an egg have?

On average, an egg provides 215 mg of cholesterol, which is 72 per cent of the 300mg recommended daily for an adult. An egg has only 1.5 grammes of saturated fat, which is about 8 per cent of the daily recommended allowance.

Cholesterol can be bad or low-density lipoprotein (LDL) or good, known as high-density lipoprotein (HDL). The risk of heart disease increases when the ratio of bad cholesterol is higher than that of good cholesterol. However, science has shown that dietary cholesterol increases both bad and good cholesterol, so that ratio does not change by a big margin.

Thus cholesterol from eggs has little effect on the LDL:HDL ratio, meaning it has little or no effect on the risk of heart diseases. It is notably, however, that sometimes eating a lot of eggs can increase the risk of heart disease in diabetics.

After studies showed that eating eggs does not lead to heart disease, the American Heart Association (AHA) reviewed its dietary recommendation of 1970 that advocated for the consumption of no more than three to four whole eggs a week and increased the number to seven. The AHA Dietary Guidelines 2000 emphasises dietary patterns and not only advises on the dietary factors to be limited, but also promotes highly nutritious foods with



an associated lower risk of cardiovascular heart disease.

Evolution of dietary guidelines

Before the end of Second World War, dietary advice was aimed at preventing nutritional deficiency. Eggs were viewed as highly nutritious. The nutrition guidelines at the time emphasised a balanced diet, with no mention of specific nutrient content. After the war, the research community attended to emerging health concerns, notably

heart disease. Early research showed that levels of blood cholesterol were associated with cardiovascular heart disease. In the 1960s and 1970s, evidence of a causal role for circulating cholesterol levels in the atherosclerotic (build-up of waxy plaque inside the blood vessels) process strengthened, and evidence for the role of dietary fats and cholesterol in modifying serum levels also emerged.

The AHA Guidelines issued in 1961 recommended reducing total fat, saturated fat, and cholesterol, and increasing intake of polyunsaturated fat.

In the 1970s, dietary recommendations advised the public to avoid saturated fat and cholesterol and specifically, to avoid eggs. In 1970, the Inter-Society Commission for Heart Disease Resources said: "Ingestion of two eggs a day will seriously hamper dietary programmes aimed at reducing blood cholesterol." This was followed in 1973 by an AHA recommendation advising that "dietary cholesterol be limited to no more than 300 mg per day, and that individuals eat no more than three egg yolks per week".

Notably, the associations 2000 dietary guidelines did not mention eggs, but advised consumers to limit foods high in saturated fat, and their cholesterol intake to less than 300mg/day. However, the advisory group acknowledged that "This target can be readily achieved, even with periodic consumption of eggs and shellfish".



1 Paradigm shift

Fortunately, science is dynamic, and researchers have made great strides in understanding cholesterol and the role it plays in heart diseases.

Consequently, new findings show that eating up to seven eggs a week does not lead to high blood cholesterol. Although eggs, particularly the yolk, are high in cholesterol, it does not mean that after eating an egg the cholesterol zooms straight into the blood.

Let us explore the scientific evidence warranting the paradigm shift.

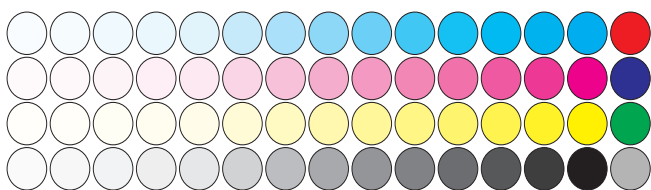
One of the largest and most comprehensive studies on the relationship between eggs and blood cholesterol was carried out by a scientist called Frank B. Hu, a professor of nutrition and epidemiology at the Harvard

School of Public Health in the US. After following 80,082 women for 14 years and 37,851 men for seven years, Prof Hu and others found no difference in the relative risk of cardiovascular heart disease (CHD) between those who ate less than one egg a week and those who ate more than one egg a day. They made their findings known in 1999.

If you consider international data for per capita egg consumption and CHD mortality rates, you will notice a negative relationship.

The countries with the highest per capita egg consumption (Japan, Mexico, France, and Spain) have the lowest rates of CHD mortality.

For example, per capita egg consumption in Japan is 338 eggs per person per year, yet the Japanese have very low CHD rates.



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and include more in our diet



3 The goodness in eggs

Eggs are rich in high-quality protein, vitamins and minerals. They contain significant amounts of iron, riboflavin, folate and vitamins B12, D, and E. Egg proteins contain all the essential amino-acids, without which protein breaks down, leading to muscle loss. They also contain all the essential vitamins except vitamin C, and also notably, vitamin D, which is found in very few foods. Most vitamins in an egg are contained in the yolk.

For infants

Eggs contain small amounts of all the minerals essential for life. Of particular interest is the iron in the egg yolk to infants. Infants who eat egg yolk have more iron than those who don't.

For expectant women

Another less familiar nutrient in eggs is choline, a compound critical for brain and memory development early in life. Choline is important for pregnant women to ensure normal development of the foetal brain. Others sources of choline are milk, liver and peanuts.

For the elderly

Eggs supply significant amounts of carotenoids that are believed to prevent some diseases. They contain certain forms of the carotenoids lutein and zeaxanthin, antioxidant-like compounds that have been shown to help in the prevention of macular degeneration, a leading cause of blindness in the elderly, and have been associated with lower risk of cataract extraction.



4 Free range, organic or caged hens' eggs?

Free-range eggs are produced by hens raised outdoors. The term "free-range" is sometimes used more loosely (and erroneously) to refer to eggs laid by hens raised indoors on an open floor rather than in cages. Free-range production (real or otherwise) does not affect the nutritional value or cholesterol level in eggs; it only makes them more expensive. Organic eggs are eggs laid by hens given "organic" feeds (i.e. grains grown without pesticides or commercial fertilizers) and raised without treatment using antibiotics and other drugs. Organic eggs have the same nutrient content as other eggs, but they are more expensive because of the higher production costs.

Brown or white eggs?

There is a misconception that the colour of an eggshell, which is determined by the breed of hen, affects its nutritional quality. White leghorn hens lay white eggs while Rhode Island Red produce brown shells. Shell colour has nothing to do with egg quality, flavour, or nutritional value. Yet thanks to this misconception, brown eggs are more expensive than white ones.

Fertilised or unfertilised eggs?

Fertile eggs are laid following fertilisation, meaning if incubated, they can hatch into chicks. Conversely, unfertilised eggs do not but rot instead. Fertilised eggs are neither more nutritious than unfertilised eggs, nor do they have less cholesterol. Notably, they are more expensive, even though they do not keep as well as unfertilised eggs.

Cholesterol content

The smaller the egg, the lower the amount of cholesterol. Quail egg provides the lowest amount of cholesterol, which is 75.6mg followed by chicken 210 mg, duck 616 mg, turkey 730 mg while goose egg provides whopping 1224mg per egg.

Does size matter?

Size determines the quantity or the amount of matter in an egg, so the bigger the egg, the higher the nutrients. In terms of protein, goose eggs provide the highest (20g) followed by turkey (11g), duck (9g), chicken (6g) and quail (1g).

Does method of preparation matter?



Boiling and poaching have virtually no effect on an egg's macronutrient content. However, both frying and scrambling substantially increase their energy value through the addition of fat. Scrambling may lead to a slight loss in proteins. Combining egg, bacon, bread and butter is not good for health.

Does storage affect nutritional quality?

Protein is modified by storage. However, fat and vitamins are not significantly affected by cold storage for up to three months. Refrigerated, eggs keep well for about three weeks.

Convenience

Eggs are fairly affordable, readily available and highly nutritious. They are also easy to prepare and can be boiled, fried, poached, etc. Indeed, for many single people, eggs and ugali are a convenient quick meal.

Eggs are easy to chew, an important factor for elderly people or those who have difficulty chewing meat or other high-protein foods due to dental problems.

Eggs are economical, especially when compared to other high-protein foods. Although prices vary, a dozen of eggs is still cheaper compared to meat, poultry, or fish. Moreover, eggs are quicker and easier to prepare than some of the other inexpensive high-protein foods, such as dry beans and meat. If you want a looking for a way to balance your food budget as well as your diet, serving eggs occasionally instead of meat, poultry, or fish is worth considering.

5 Allergies

Eggs are a common cause of food allergies in infants. Although most allergies are caused by egg-white protein, proteins in the yolk can also cause allergies. Egg white contains 50 per cent ovalbumin, the major allergen.

Since eggs tend to trigger allergies, it is advisable not to feed egg yolk to babies below six months, and to feed egg white to babies only after they are a year old. When feeding egg yolk to children between the ages of 6 months and 12 months, the eggs should be prepared in such a way that the egg white can be completely removed, as in hard-boiled eggs. Most children outgrow their allergy by the age of five

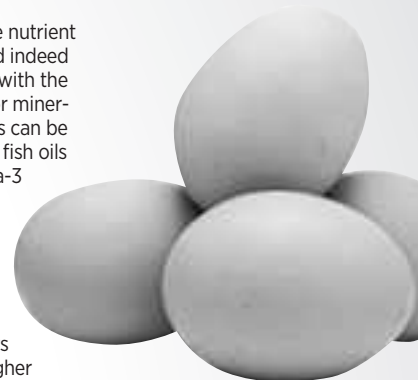
Egg as a functional food

A functional food is the one that provides health benefits beyond that of the traditional nutrients it contains. In their

natural state, eggs are nutrient rich. But they can, and indeed have, been improved with the addition of vitamins or minerals. For instance, hens can be fed with flaxseed and fish oils to improve the omega-3 fatty acid in their eggs contain. Consumption of these designer eggs can be advantageous, for instance, breastfeeding mothers who eat eggs with higher amounts of omega-3-fatty acids have more of the nutrients in their milk.

The way forward

The time has come to change consumer attitudes and make them focus on how eggs contribute to overall health rather than incorrectly seeing them as potentially harmful. Scientists, medical professionals and communicators should take up the challenge and change consumer attitudes towards



eggs. The association of eggs with heart disease arose from observational studies, but its perpetuation is driven more by culture and public health than by science.

Eggs are viewed negatively, and the fear of eating eggs may be the result of a lack of consensus within the scientific community and the widespread marketing of low-cholesterol foods rather than its true effects on health.