New research has reopened the debate on whether eggs are beneficial or harmful in terms of stroke or coronary heart disease (CHD) risk.

Combined results from a new meta-analysis of seven prospective cohort studies suggest that eating approximately one egg a day is associated with a 12% reduced risk for total stroke compared with eating fewer eggs. On the other hand, no significant associations between egg consumption and CHD risk were found.

Lead author Dominik D. Alexander, PhD, principal epidemiologist at EpidStat Institute, Seattle, Washington, noted that more research is now needed into understanding the underlying mechanisms of these associations. Although eggs contain antioxidants, which have been shown to reduce oxidative stress and inflammation, Dr Alexander told Medscape Medical News, "that's just one postulated mechanism" that needs to be explored further.

"Using our systematic approach, we were able to estimate the magnitude of the association among egg consumption and stroke and [CHD], but I would suggest that future research focus on intake levels. And we will then continually update the state of that type of science," he said.

"I'm not saying anything is a 'magic bullet'," he added. "I believe in a well-balanced diet and lifestyle. And, based on this study, I believe that consumption of eggs can fit into a well-balanced dietary pattern."

The findings are published in the current issue of the Journal of the American College of Nutrition.

When asked for comment, J. David Spence, MD, director of the Stroke Prevention and Atherosclerosis Research Center at Western University, London, Ontario, Canada, told Medscape Medical News he's skeptical of the results for several reasons, including that the study was partially funded by the Egg Nutrition Center.

"Eating egg yolks is not okay. Another problem with the studies in the review is one of reverse causality," said Dr Spence, who is not involved with the research but has been critical of egg consumption in the past.

"People who have bad arteries are warned by their doctors to stop eating eggs," he said. "But to stop eating egg yolks after having a heart attack would be like stopping smoking after a lung cancer diagnosis."

Updated Review

The investigators note that eggs are a common source of dietary cholesterol, and that a single large egg contains about 186 mg of cholesterol. However, because it also contains such components as protein and essential fatty acids, it "should be evaluated based on total consumption rather than specific constituents, such as cholesterol," they write.

They add that although a possible link between dietary cholesterol and coronary outcomes "has been scrutinized for decades," recent reviews have downplayed the concerns.

In addition, the 2015 Dietary Guidelines for Americans state that "available evidence shows no appreciable relationship between consumption of dietary cholesterol and serum cholesterol" and "cholesterol is not a nutrient of concern for overconsumption," report the investigators.

They note that because of the publication of several newer studies, they wanted to conduct their own comprehensive and updated review "to estimate summary associations" between egg intake and cardiovascular outcomes.

"I specialize in systematic review methodology and putting the evidence together — synthesizing the data across studies to make an informed decision on a body of epidemiological literature," added Dr Alexander.
His investigative team searched the literature through August 2015 and included 17 prospective cohort studies in their "qualitative synthesis." The final count was 15 studies.

This included 7 studies, with 308,000 total adult participants, that assessed egg intake and stroke risk, and 7 studies, with 276,000 participants, which assessed egg intake and CHD risk. Although most studies were conducted in the United States, some took place in Japan, Australia, Spain, and the United Kingdom.

"Real Time" Science?

Results showed that the summary relative risk estimate (SRRE) was 0.88 for stroke in those who ate 1 egg daily vs those who ate fewer than 2 eggs per week (95% confidence interval [CI], 0.81 - 0.97).

Although one study provided 50% of the relative weight in this analysis model, removing it still provided an SRRE for stroke of 0.87 (95% CI, 0.74 - 1.03). On the basis of 4 studies, the SRRE for fatal stroke was 0.78 (95% CI, 0.52 - 1.19).

Just eating up to 3.5 eggs per week was also associated with significant stroke reduction (SRRE, 0.90; 95% CI, 0.86 - 0.95).

However, the SRRE was a non–statistically significant 0.97 for total CHD (95% CI, 0.88 - 1.07). Although egg consumption didn't lower the risk for CHD, it also didn't increase the risk, note the investigators.

There were no "clear dose-response trends" found in either the meta-analyses or meta-regression analyses for CHD risk.

"Our findings are relatively consistent with 2 previous meta-analyses of egg consumption and CVD [cardiovascular disease], CHD, and stroke," write the researchers.

However, because data from cohort studies were used, "the validity of a meta-analysis is not immune to the limitations of data generated from observational research." In addition, there was no way to assess whether the participants with a higher egg intake engaged in favorable lifestyle habits that could have contributed to the favorable results.

"Still, we were able to advance the science," said Dr Alexander. That said, "I presume that more cohorts will have data and a new meta-analysis will be published on this topic area within the next couple of years," he added.

He acknowledged that egg consumption has been a controversial dietary area. "I think what we thought we knew isn't what we know now. It's an evolution of science. And I think clinicians should make informed decisions based on the science in real time."

Eggs Whites vs Egg Yolks

Dr Spence, who is also a professor of neurology and clinical pharmacology at Western University, is not convinced.

He commented that a 2014 report from the American Heart Association noted that diet was the worst lifestyle issue in the United States, with few individuals partaking in a healthy diet. "That's why it was hard to show the harm from eggs among Americans."

Two of the studies included in the current review showed that an egg-per-day intake "doubled coronary risk only among Americans who became diabetic during follow-up." However, another study conducted in Greece, where individuals eat a predominantly Mediterranean diet, "showed that eating an egg a day increased coronary risk five-fold," said Dr Spence.

"Egg yolks are not okay. They're a huge source of cholesterol, which is harmful — notwithstanding the propaganda of the egg industry. They contain phosphatidylcholine, which is converted into trimethylamine and then oxidized in the liver to trimethylamine-N-oxide, or TMAO," he said.

"And a 2013 study in the New England Journal of Medicine showed that high levels of TMAO increase heart attack, stroke, or death."

In an October 26 presentation at the World Stroke Congress 2016 in Hyderabad, India, Dr Spence pointed out that the 2015 US Dietary Guidelines "did not say it was okay to eat cholesterol." Instead, they said there were not sufficient data to specify a daily target of cholesterol intake. "But cholesterol intake should be as low as possible within the recommended dietary pattern," he noted.

He added that egg whites, rather than egg yolks, are a good source of protein, and along with other egg substitutes, should be
used in place of egg yolks.

“You can use these to make an omelette or tasty frittata or even egg salad sandwiches. But as for egg yolks, clinicians should tell patients that they're bad for the arteries,” concluded Dr Spence.

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