

# Inaccurate Claims made in relation to a study on egg and cholesterol consumption and mortality risk



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In response to a new study published in PLOS Medicine on egg and cholesterol consumption and mortality<sup>1</sup>, Australian Eggs urges caution in how the study findings should be interpreted by Australian consumers and health care professionals.

According to Accredited Practicing Dietitian Sharon Natoli, whilst the study was conducted over a long period of time and included a large sample size, the observational nature of the results are not able to confirm a causal relationship between egg intake, dietary cholesterol and mortality.

"Individuals consume a wide variety of foods and make a myriad of lifestyle choices that influence health each day," said Sharon.

"Observational studies investigating relationships between individual foods or nutrients and health outcomes provide important insights but other factors that influence the relationship can never be completely controlled for in this type of analysis."

Furthermore, evidence from an observational study published in May 2020 reported no significant association between egg intake and all-cause or heart disease mortality in a representative sample of US adults<sup>2</sup>. These divergent findings indicate a need for further research.

In the PLOS medicine article, Zhuang and colleagues point to the cholesterol content of eggs (contained in the egg yolk) as the culprit for the link with mortality and suggest replacing whole eggs with egg whites or substitutes – a recommendation not supported by an extensive body of research.

"It is vital to remember that egg yolks are an important part of the whole egg as they contain key essential nutrients including vitamin D as well as the antioxidants lutein and zeaxanthin which are important for eye health," added Sharon. "Eggs are a nutrient dense whole food and people can feel reassured about enjoying them as part of a healthy, balanced diet, that is consistent with the recommendations outlined in the Australian Dietary Guidelines."

## Study Summary

This large observational study of 521, 120 U.S. adults investigated the association between egg intake (self-reported on validated questionnaires at the start of the study 1995-1996) and mortality (death) from all-causes including cardiovascular disease. The researchers also specifically looked at dietary cholesterol intake and the intake of egg whites/egg substitutes and whether these were associated with mortality.

After approximately 16 years of follow up (in which time 129,328 people died), whole egg consumption was strongly associated with higher all-cause mortality. However, after adjusting for a range of demographic and dietary characteristics of the individuals in the study, the strength of the relationship weakened and was no longer significant once total dietary cholesterol intake was taken into account. This indicates the relationship between egg intake and mortality is largely influenced by overall cholesterol intake.

Overall, the researchers concluded that limiting cholesterol intake and replacing whole eggs with egg whites/substitutes could facilitate heart health and long-term survival. The researchers acknowledged that other evidence in this area has been inconsistent, that there are limitations to their research including that *“a causal relationship cannot be established, given the study’s observational nature”*.

## References

1. Zhuang P, Wu F, Mao L, Zhu F, Zhang Y, Chen X, et al. (2021) Egg and cholesterol consumption and mortality from cardiovascular and different causes in the United States: A population-based cohort study. PLoS Med 18(2): e1003508. doi:10.1371/journal.pmed.1003508
2. Xia PF, Pan XF, Chen C, Wang Y, Ye Y, Pan A. Dietary Intakes of Eggs and Cholesterol in Relation to All-Cause and Heart Disease Mortality: A Prospective Cohort Study. J Am Heart Assoc. 2020 May 18;9(10):e015743. doi: 10.1161/JAHA.119.015743. Epub 2020 May 13. PMID: 32400247; PMCID: PMC7660855.