

Egg Consumption and Nutrition Outcomes

A review of the recent literature



Eggs serve as a rich source of nutrients (see *Table 1*), especially in settings where other nutrient-dense foods are limited or expensive.

Table 1

Serving Size 1 egg approx. 50 g	Amount per serving USDA*	Amount per serving NIN**
Calories	70	84
Total Fat	5 g	6.5 g
Saturated Fat	1.5 g	1.9 g
Cholesterol	185 mg	178 mg
Sodium	70 mg	79 mg
Total Carbohydrate	0 g	Not Provided
Protein	6 g	6.6 g

* Values are derived from the United States Department of Agriculture (USDA) Food Table using 24 samples of "Grade A, large, egg whole".

** Values were derived from the National Institute of Nutrition (NIN) Indian Food Composition Tables 2017 using 5 samples from 6 regions of "egg, country hen, whole, raw". Amounts were originally reported per 100 g therefore were divided by 2 to compare with the USDA serving size of 1 egg approximately 50 g.

To evaluate the potential impact of egg consumption on the nutritional outcomes of infants, a randomized controlled trial in a rural province in Ecuador fed eggs daily to infants aged 6 to 9 months for 6 months as part of an intervention (n=83) and compared them to a control group who received no eggs (n=80) (*Iannotti et al. 2017*). The trial showed promising results: infants in the intervention group experienced a significant reduction in the prevalence of stunting (by 47%) and underweight (by 74%) compared to those in the control group (*Iannotti et al. 2017*).

A follow-up of this same study found that the benefits to growth observed during the 6-month intervention may not be long-lasting (*Iannotti et al. 2019*). The follow-up study collected data from the same children to evaluate any differences between them 2 years after the completion of the intervention. They found that egg consumption was not different between groups and in both groups, growth had declined. Thus, in the absence of an intervention, daily consumption of eggs declined and therefore growth faltered. The takeaway from this study is that egg consumption may improve growth among infants and children, but regular egg consumption is needed to maintain growth gains.

Along with this seminal study in Ecuador, a handful of other studies have evaluated the role of egg consumption in addressing undernutrition in both children and adults. However, findings have been inconsistent regarding the role of egg consumption on nutrition outcomes. The promising effects observed in Ecuador have not been replicated elsewhere.

Table 2 Summary of Studies Evaluating Egg Consumption and Nutritional Outcomes since 2017.

Reference	Country	Intervention	Study Design	Target Population	Findings
Little et al. 2018	Tamil Nadu, India	None – observational study Recorded egg consumption with a Food Frequency Questionnaire	Cross-sectional Sample size = 812 Recruited through randomized two-stage method from 17 villages	Adults ≥ 20 years Excluded pregnant women	Egg consumption was significantly associated with reduced odds of mild anemia compared to no anemia in men, but not with moderate or severe anemia in this sample. No association was found between egg consumption and anemia in non-pregnant women.
Mahfuz et al. 2020	Bangladesh	Daily feeding of milk and egg in addition to nutrition counseling sessions for mothers for 90 days	Community-based non-randomized Sample size = 646 472 intervention 174 control	Children aged 12-18 months with a length-for-age z-score (LAZ) < 1	Children who received daily feeding of milk and egg and whose mothers had nutrition counseling for 90 days had better LAZ than children who had not: difference-in-difference = 0.23, 95% CI (0.17, 0.28)
Stark et al. 2021; McKune et al. 2020	Burkina Faso	The <i>full intervention</i> gifted 4 chickens and provided targeted messaging to caregivers about eating an egg every day for 10 months The <i>partial intervention</i> received integrated nutrition and agriculture sessions and counseling for mothers regarding nutrition for 10 months The <i>control group</i> received no intervention	1-year cluster-randomized controlled trial Sample size = 250 77 full intervention 86 partial intervention 87 control 18 villages were randomly selected and assigned to 1 of 3 intervention arms	Children aged 4.5-18 months	Children in the full intervention group had a significant decrease in wasting and underweight compared to children who did not receive any intervention: wasting b = 0.58, p-value = 0.03 and underweight b = 0.47, p-value = 0.025 None of the interventions had a significant effect on child stunting



Table 2 (contd.) Summary of Studies Evaluating Egg Consumption and Nutritional Outcomes since 2017.

Reference	Country	Intervention	Study Design	Target Population	Findings
Zaharia 2021	Nepal, Bangladesh, Uganda	None – observational study Evaluated long-term effects of animal-sourced food intake across multiple contexts	Longitudinal Nepal: sample size = 1,564 Bangladesh: sample size = 2,413 Uganda: sample size = 2,348	Children aged 6-24 months	Children in Bangladesh who had been consuming eggs 6 months prior to study measurements had significantly higher LAZ and lower stunting rates compared to children who did not consume eggs: LAZ $b = 0.15$, 95% CI (0.02, 0.28), and stunting $b = -0.08$, 95% CI (-0.13, -0.04) Similar results were not found for eggs in Uganda and Nepal but cannot be generalized due to small sample size of children consuming eggs for those countries
Stewart et al. 2019	Malawi	Mazira Project <i>Intervention</i> - Randomized to receive 1egg/day for 6 months <i>Control</i> - continue usual diet	Randomized controlled trial Sample size= 595 290 intervention 305 control (with available anthropometric information)	Children aged 6-9 months	There was no effect of the intervention on LAZ There was also no effect on the prevalence of stunting However, children whose mothers had higher educational attainment saw a significant increase in LAZ $b = 0.23$, 95% CI (0.04, 0.42) compared to controls
Werner et al. 2022	Malawi	Mazira Project <i>Intervention</i> - Randomized to receive 1egg/day for 6 months <i>Control</i> - continue usual diet	Randomized controlled trial Sample size= 595 290 intervention 305 control (with available anthropometric information)	Children aged 6-9 months	There was no effect of the intervention on inflammation-adjusted ferritin (a measure of iron status) at 6-month follow-up. There was no effect of the intervention on group-level anemia prevalence



References

- **Iannotti, Melissa Chapnick, J. Nicholas, Carlos Andres Gallegos-Riofrío, Patricia Moreno, K. Douglas, David V. Habif, et al. 2019.** "Egg Intervention Effect on Linear Growth No Longer Present after Two Years." *Maternal & Child Nutrition*. <https://doi.org/10.1111/mcn.12925>.
- **Iannotti, Chessa K. Lutter, Christine P. Stewart, Carlos Andres Gallegos Riofrío, Carla Malo, Gregory Reinhart, Ana Palacios, et al. 2017.** "Eggs in Early Complementary Feeding and Child Growth: A Randomized Controlled Trial." *Pediatrics* 140 (1): e20163459. <https://doi.org/10.1542/peds.2016-3459>.
- **Little, Matthew, Chloe Zivot, Sally Humphries, Warren Dodd, Kirit Patel, and Cate Dewey. 2018.** "Burden and Determinants of Anemia in a Rural Population in South India: A Cross-Sectional Study." *Anemia* 2018 (July): e7123976. <https://doi.org/10.1155/2018/7123976>.
- **McKune, Sarah L., Heather Stark, Amanda C. Sapp, Yang Yang, Crystal M. Slanzi, Emily V. Moore, Anteneh Omer, and Aissata Wereme N'Diaye. 2020.** "Behavior Change, Egg Consumption, and Child Nutrition: A Cluster Randomized Controlled Trial." *Pediatrics* 146 (6): e2020007930. <https://doi.org/10.1542/peds.2020-007930>.
- **Stark, Heather, Anteneh Omer, Aïssata Wereme N'Diaye, Amanda C. Sapp, Emily V. Moore, and Sarah L. McKune. 2021.** "The Un Oeuf Study: Design, Methods and Baseline Data from a Cluster Randomised Controlled Trial to Increase Child Egg Consumption in Burkina Faso." *Maternal & Child Nutrition* 17 (1): e13069. <https://doi.org/10.1111/mcn.13069>.
- **Stewart, Christine P, Bess Caswell, Lora Iannotti, Chessa Lutter, Charles D Arnold, Raphael Chipatala, Elizabeth L Prado, and Kenneth Maleta. 2019.** "The Effect of Eggs on Early Child Growth in Rural Malawi: The Mazira Project Randomized Controlled Trial." *The American Journal of Clinical Nutrition* 110 (4): 1026–33. <https://doi.org/10.1093/ajcn/nqz163>.
- **Werner, E Rochelle, Charles D Arnold, Bess L Caswell, Lora L Iannotti, Chessa K Lutter, Kenneth M Maleta, and Christine P Stewart. 2022.** "The Effects of One Egg per Day on Iron and Anemia Status among Young Malawian Children: A Secondary Analysis of a Randomized Controlled Trial." *Current Developments in Nutrition*, May, nzac094. <https://doi.org/10.1093/cdn/nzac094>.
- **Zaharia, Sonia. 2021.** "Sustained Intake of Animal-Sourced Foods Is Associated with Less Stunting in Young Children | Nature Food." 2021. <https://www.nature.com/articles/s43016-021-00259-z>.



Search Criteria

["egg*" OR "egg consumption"] AND ["anemia" OR "stunting"] with Filter "Since 2017" in Google Scholar.

The search yielded 18,000 results of which 10 were identified as examining the isolated role of egg consumption on relevant nutrition outcomes. Of these, 6 were included in the review.

We verified that authors of articles included in the review did not report conflicts of interest (i.e. funding from the egg industry).

Acknowledgements

This report has been prepared by Kaela Connors with input from Lindsay Jaacks.

Report version: 1 June 2022

