

May 16, 2022

Thank you for the opportunity to submit comments about the scientific questions that will inform the *Dietary Guidelines for Americans, 2025-2030*.

The Vegetarian Resource Group (VRG) is an independent non-profit organization dedicated to educating the public on vegetarianism and the interrelated issues of health, nutrition, environment, ethics, and world hunger. Our health professionals, activists, and educators work with businesses and individuals to bring about healthy changes in schools, workplaces, and the community. Registered dietitians and physicians aid in the development of nutrition-related publications and answer questions about the vegetarian and vegan diet. For the past 28 years, we have commissioned polls exploring vegetarian-related issues, results of which are often used by researchers, the food industry, and the media. Financial support comes primarily from memberships, contributions, and book sales.

This comment describes suggested changes to the question What is the relationship between dietary patterns consumed and growth, size, body composition, risk of overweight and obesity, and weight loss and maintenance; risk of cardiovascular disease; risk of type 2 diabetes; risk of certain types of cancer (breast, colorectal, lung, prostate); risk of cognitive decline, mild cognitive impairment, dementia, and Alzheimer’s disease; risk of sarcopenia; bone health; and all-cause mortality?

We propose that the phrase “dietary patterns” be modified to list specific dietary patterns. We propose that the dietary patterns examined include vegetarian and vegan diets. Approximately 6% of adults in the United States consistently follow a vegetarian (including vegan) diet; 3% of U.S. adults consistently follow a vegan diet; 63% of adults always, usually, or sometimes eats vegetarian (including vegan) meals; and 29% of adults always, usually, or sometimes eats vegan meals.¹ The increasing use of vegetarian (including vegan) diets in the United States indicates that examination of the relationship of these diets and the listed conditions is an area of importance to public health.

Vegetarian and vegan diets have been associated with a

- 40% lower risk of coronary heart disease events and a 29% reduction in cerebrovascular disease events²
- 25% lower risk of incidence and/or mortality from ischemic heart disease³
- 8% lower incidence of cancer overall (15% lower incidence in vegans)³
- Lower BMI (Vegetarians: -1.48 kg/m²; vegans: -1.72 kg/m²)³
- Lower mean systolic (-6.9 mm Hg) and diastolic (-4.7 mm Hg) blood pressure⁴
- Lower incidence of hypertension^{5,6}
- Lower incidence of type 2 diabetes^{7,8}

Vegetarian diets have been successfully used to treat overweight and obesity⁹⁻¹³ and type 2 diabetes.¹³⁻¹⁵ Vegetarian diets are associated with lower all-cause mortality.¹⁶ Despite these results, Federal food and nutrition policies and programs provide only limited support for greater use of vegetarian and vegan diets.

This comment describes suggested changes to the question What is the relationship between consumption of dietary patterns with varying amounts of ultra-processed foods and growth, size, body composition, risk of overweight and obesity, and weight loss and maintenance?

A number of foods that may be used by vegetarians as sources of important nutrients such as vitamin B12, calcium, and vitamin D due, in part, to fortification practices are commonly classified as ultra-processed foods.¹⁷⁻²⁰ These foods, that may be used by vegetarians, include plant milks, seitan cutlets, and commercial veggie burgers. Any examination of the effects of ultra-processed foods on health issues should be accompanied by a careful, evidence-based determination of which foods should be classified as ultra-processed foods. Ultra-processed foods are thought of as being high in calories, salt, sugar, and fat and are often associated with being the foods we crave, despite having little to recommend them in terms of nutrition. This hardly seems like the correct category for foods such as plant milks or some brands of veggie burgers.

The American Society for Preventive Cardiology has proposed a new category of “smartly processed” foods which includes fortified plant milks and plant protein-based meat and egg substitutes.²¹ They describe these foods as low in saturated fat, refined carbohydrates, and cholesterol and state that these foods can add nutrition value. We urge the Committee to carefully consider which foods are categorized as ultra-processed foods because incorrect categorization could lead to inaccurate conclusions about the relationship between consumption of these foods and various conditions.

This comment proposes a new scientific question.

The proposed question is What is the relationship between consumption of foods developed based on animal cell DNA as alternatives to conventional meat and dairy products and growth, size, body composition, allergies, risk of cardiovascular disease, risk of certain types of cancer, and weight loss and maintenance?

Alternatives to meat and dairy products are being developed based on animal cell DNA.²² Little research has been published on the safety of these products or on associated health risks or benefits, representing a significant knowledge gap. As these products enter the market,

guidelines are needed to inform Federal food and nutrition policies and programs. This question has not been addressed through other evidence-based Federal guidelines.

This comment describes suggested changes to the question What is the relationship between dietary patterns consumed before and during pregnancy and risk of gestational diabetes, risk of hypertensive disorders of pregnancy, gestational age at birth, and birth weight standardized for gestational age and sex?

We propose that the phrase “dietary patterns” be modified to list specific dietary patterns. We propose that the dietary patterns examined include vegetarian and vegan diets. As noted earlier, a significant number of adults in the United States always, usually, or sometimes eat vegetarian (including vegan) meals.¹ The increasing use of vegetarian (including vegan) diets in the United States indicates that examination of the relationship of these diets and pregnancy is an area of importance to public health.

Limited research suggests that vegetarian diets are associated with a reduced risk of gestational diabetes and are not associated with an increased risk of preterm birth.^{23, 24} Consumption of generous amounts of plant-derived foods in pregnancy, which is typical of many vegetarian eating patterns, is associated with a reduced risk of gestational diabetes and hypertensive disorders in pregnancy.^{25,26} Dietary patterns high in vegetables, fruits, whole grains, nuts, legumes, and seeds are consistently associated with a lower risk of preterm birth.²⁷

This comment describes suggested changes to the question What is the relationship between dietary patterns consumed before and during pregnancy and lactation and developmental milestones, including neurocognitive development, in the child?

We propose that the phrase “dietary patterns” be modified to list specific dietary patterns. We propose that the dietary patterns examined include vegetarian and vegan diets. Vegetarian diets contain little DHA and vegan diets do not contain DHA unless supplements are used.²⁸ Similarly, those whose diets do not include fish have very low intakes of DHA. Although some studies report beneficial effects of higher maternal DHA intake on infant language development and visual function,²⁹⁻³¹ consistent, long-term benefits have not been seen in childhood.³³⁻³⁵ Omega-3 supplementation in pregnancy was not associated with significantly improved cognition, IQ, vision, or other developmental or growth outcomes.³⁶ The relationship between consumption or avoidance of fish (and other sources of DHA) before and during pregnancy and lactation and developmental milestones including neurocognitive development in the child should be systematically examined.

This comment describes suggested changes to the question What is the relationship between 1) timing of introduction, and 2) types and amounts of complementary foods and beverages and growth, size, body composition, and risk of overweight and obesity? iron and zinc status?

We propose an examination of use of a vegetarian (including a vegan) diet when complementary foods and beverages are introduced and growth, size, body composition, and iron and zinc status. Families who follow vegetarian and vegan diets and who choose to raise their children on these diets need evidence-based guidance for dietary composition. When investigating these issues, it is important to avoid using evidence from infants and children living in conditions of poverty and limited food availability since these are not generally reflective of the conditions of infants and children eating vegetarian and vegan diets in the United States and are not necessarily vegetarian, but rather limited omnivore diets.

This comment is in support of the question Considering each life stage, should changes be made to the USDA Dietary Patterns (Healthy U.S.-Style, Healthy Mediterranean-Style, and/or Healthy Vegetarian), and should additional Dietary Patterns be developed/proposed based on Population norms (e.g., starchy vegetables are often consumed interchangeably with grains), preferences (e.g., emphasis on one staple grain versus another), or needs (e.g., lactose intolerance) of the diverse individuals and cultural foodways within the U.S. population?

We encourage the development of additional practical recommendations for those following vegan diets. These recommendations should be based on what those following vegan diets really eat, rather than modifying non-vegan eating patterns to include vegan foods. For example, vegans do not necessarily drink 3 or more cups of fortified soymilk daily, nor is this necessary to provide adequate amounts of calcium and protein. Vegans may eat larger portions of vegetables and legumes than do those eating nonvegan diets. Additionally, vegetarian and vegan eating patterns should be developed that reflect the diversity of people and foodways in the United States. These could include Asian Indians, Chinese vegan Buddhists, Latino vegetarians and vegans, vegetarian and vegan soul food, and those eating a more traditional American diet modified to be vegan or vegetarian.

This comment describes suggested changes to the question Considering each life stage, should changes be made to the USDA Dietary Patterns (Healthy U.S.-Style, Healthy Mediterranean-Style, and/or Healthy Vegetarian), and should additional Dietary Patterns be developed/proposed based on findings from systematic reviews, data analysis, and/or food pattern modeling analyses.

We propose that food pattern modeling analysis, based on what vegans actually eat be used to develop a Healthy Vegan eating pattern which would meet the needs of those following vegan diets and others who are interested in reducing animal product consumption. Research would be needed to collect information on food consumption habits of vegans in the United States.

We are concerned that sustainability and the relationship between nutrition and climate change is not being addressed by the Dietary Guidelines Advisory Committee. Although USDA and HHS acknowledge that this is “an important, cross-cutting, and high priority topic,” no specific plans have been communicated as to how or when USDA and HHS will address this topic. The connections between dietary choices and climate change should be clearly delineated, effectively communicated to the American people, and form the basis for Federal nutrition policy.

We encourage the Committee to continue to stress the benefits of vegan and vegetarian diets, to expand the discussion of benefits of these diets, and to continue to identify these diets as healthy eating patterns.

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References

1. Stahler C, Mangels R. How many vegetarians and vegans are there? 2022 Adult Poll. <https://www.vrg.org/nutshell/faq.htm#adult>
2. Kwok CS, Umar S, Myint PK, Mamas MA, Loke YK. Vegetarian diet, Seventh Day Adventists and risk of cardiovascular mortality: A systematic review and meta-analysis. *Int J Cardiol.* 2014;176: 680–686.
3. Dinu M, Abbate R, Gensini GF, Casini A, Sofi F. Vegetarian, vegan diets and multiple health outcomes: A systematic review with meta-analysis of observational studies. *Crit Rev Food Sci Nutr.* 2017; 57:3640-3649.
4. Yokoyama Y, Nishimura K, Barnard ND, et al. Vegetarian diets and blood pressure: A meta-analysis. *JAMA Intern Med.* 2014 Apr;174(4):577-87.
5. Melina V, Craig W, Levin S; The Academy of Nutrition and Dietetics. Position of the Academy of Nutrition and Dietetics: Vegetarian diets. *J Acad Nutr Diet.* 2016 Dec;116(12):1970-1980.
6. Pettersen BJ, Anousheh R, Fan J, Jaceldo-Siegl K, Fraser GE. Vegetarian diets and blood pressure among white subjects: results from the Adventist Health Study-2 (AHS-2). *Public Health Nutr* 2012; 15:1909–16.
7. Lee Y, Park K. Adherence to a vegetarian diet and diabetes risk: A systematic review and meta-analysis of observational studies. *Nutrients.* 2017;9(6):603.
8. Pollakova D, Andreadi A, Pacifici F, Della-Morte D, Lauro D, Tubili C. The Impact of vegan diet in the prevention and treatment of type 2 diabetes: A systematic review. *Nutrients.* 2021;13(6):2123.
9. Kahleova H, Petersen KF, Shulman GI, et al. Effect of a low-fat vegan diet on body weight, insulin sensitivity, postprandial metabolism, and intramyocellular and hepatocellular lipid levels in overweight adults: A randomized clinical trial. *JAMA Netw Open.* 2020;3(11):e2025454.
10. Turner-McGrievy GM, Davidson CR, Wingard EE, Wilcox S, Frongillo EA. Comparative effectiveness of plant-based diets for weight loss: a randomized controlled trial of five different diets. *Nutrition.* 2015;31(2):350-358.
11. Ivanova S, Delattre C, Karcheva-Bahchevanska D, Benbasat N, Nalbantova V, Ivanov K. Plant-based diet as a strategy for weight control. *Foods.* 2021;10(12):3052.
12. Kahleova H, Fleeman R, Hlozkova A, Holubkov R, Barnard ND. A plant-based diet in overweight individuals in a 16-week randomized clinical trial: metabolic benefits of plant protein. *Nutr Diabetes.* 2018;8(1):58.
13. Craig WJ, Mangels AR, Fresán U, et al. The safe and effective use of plant-based diets with guidelines for health professionals. *Nutrients.* 2021;13(11):4144.

14. Toumpanakis A, Turnbull T, Alba-Barba I. Effectiveness of plant-based diets in promoting well-being in the management of type 2 diabetes: a systematic review. *BMJ Open Diabetes Res Care*. 2018;6(1):e000534.
15. Yokoyama Y, Barnard ND, Levin SM, Watanabe M. Vegetarian diets and glycemic control in diabetes: a systematic review and meta-analysis. *Cardiovasc Diagn Ther*. 2014;4(5):373-382.
16. Orlich MJ, Singh PN, Sabaté J, et al. Vegetarian dietary patterns and mortality in Adventist Health Study 2. *JAMA Intern Med*. 2013;173(13):1230-1238.
17. Orlich MJ, Sabaté J, Mashchak A, et al. Ultra-processed food intake and animal-based food intake and mortality in the Adventist Health Study-2 [published online ahead of print, 2022 Feb 24]. *Am J Clin Nutr*. 2022;nqac043. doi:10.1093/ajcn/nqac043
18. Gehring J, Touvier M, Baudry J, et al. Consumption of ultra-processed foods by pesco-vegetarians, vegetarians, and vegans: associations with duration and age at diet initiation. *J Nutr*. 2021;151(1):120-131.
19. Lichtenstein AH, Appel LJ, Vadiveloo M, et al. 2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association. *Circulation*. 2021;144(23):e472-e487.
20. Messina M, Sievenpiper JL, Williamson P, Kiel J, Erdman JW. Perspective: Soy-based meat and dairy alternatives, despite classification as ultra-processed foods, deliver high-quality nutrition on par with unprocessed or minimally processed animal-based counterparts [published online ahead of print, 2022 Mar 23]. *Adv Nutr*. 2022;nmac026. doi:10.1093/advances/nmac026
21. Belardo D, Michos ED, Blankstein R, et al. Practical, evidence-based approaches to nutritional modifications to reduce atherosclerotic cardiovascular disease: an American Society For Preventive Cardiology Clinical Practice Statement. *Am J Prev Cardiol*. 2022;10:100323
22. Yacoubou J. "Animal-free" cream cheese. Is it vegan? <https://www.vrg.org/blog/2021/12/16/animal-free-cream-cheese-is-it-vegan/>. 2021.
23. Sebastiani G, Herranz Barbero A, Borrás-Novell C, et al. The effects of vegetarian and vegan diet during pregnancy on the health of mothers and offspring. *Nutrients*. 2019;11(3):557.
24. Baroni L, Rizzo G, Goggi S, Giampieri F, Battino M. Vegetarian diets during pregnancy: Effects on the mother's health. A systematic review. *Food Funct*. 2021;12(2):466-493.
25. Pistollato F, Sumalla Cano S, Elio I, et al. Plant-based and plant-rich diet patterns during gestation: Beneficial effects and possible shortcomings. *Adv Nutr*. 2015;6(5):581-591.
26. Raghavan R, Dreibelbis C, Kingshapp BL, et al. Dietary patterns before and during pregnancy and maternal outcomes: A systematic review. *Am J Clin Nutr*. 2019;109(Suppl 7):705S-728S.

27. Raghavan R, Dreibelbis C, Kingshipp BL, et al. Dietary patterns before and during pregnancy and birth outcomes: A systematic review. *Am J Clin Nutr*. 2019;109(Suppl_7):729S-756S.
28. Mangels, R.; Messina, V.; Messina, M. *The Dietitian's Guide to Vegetarian Diets*, 4th ed. Jones and Bartlett: Sudbury, MA, USA, 2022.
29. Mulder KA, King DJ, Innis SM. Omega-3 fatty acid deficiency in infants before birth identified using a randomized trial of maternal DHA supplementation in pregnancy. *PLoS One*. 2014;9(1):e83764. doi:10.1371/journal.pone.0083764
30. Judge MP, Harel O, Lammi-Keefe CJ. A docosahexaenoic acid-functional food during pregnancy benefits infant visual acuity at four but not six months of age. *Lipids*. 2007;42:117–122.
31. Carlson SE. Docosahexaenoic acid supplementation in pregnancy and lactation. *Am J Clin Nutr*. 2009;89(2):678S–684S.
32. Colombo J, Shaddy DJ, Gustafson K, et al. The Kansas University DHA Outcomes Study (KUDOS) clinical trial: Long-term behavioral follow-up of the effects of prenatal DHA supplementation. *Am J Clin Nutr*. 2019;109(5):1380–1392.
33. Meldrum S, Dunstan JA, Foster JK, Simmer K, Prescott SL. Maternal fish oil supplementation in pregnancy: A 12 year follow-up of a randomised controlled trial. *Nutrients*. 2015;7(3):2061–2067.
34. Makrides M, Gould JF, Gawlik NR, et al. Four-year follow-up of children born to women in a randomized trial of prenatal DHA supplementation. *JAMA*. 2014;311(17):1802–1804.
35. Gould JF, Treyvaud K, Yelland LN, et al. Seven-year follow-up of children born to women in a randomized trial of prenatal DHA supplementation. *JAMA*. 2017;317(11):1173–1175.
36. Middleton P, Gomersall JC, Gould JF, et al. Omega-3 fatty acid addition during pregnancy. *Cochrane Database Syst Rev*. 2018;11(11):CD003402. doi:10.1002/14651858.CD003402.pub3