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Re: Scientific Questions to be Examined to Support the Development of the Dietary Guidelines for Americans 2025-2030; Docket No. HHS-OASH-2022-0005

Dear Ms. de Jesus and Ms. Levine,

I respectfully submit this comment to the U.S. Departments of Agriculture and Health and Human Services regarding the proposed scientific questions to be examined in developing the 2025-2030 *Dietary Guidelines for Americans* (DGA). I am part of the policy team at the University of California Nutrition Policy Institute, where I also engage in research and coordinate the National Drinking Water Alliance. These activities bring me into contact with drinking water stakeholders of all sorts and from across the country: community-based organizations, childcare providers, educators, health professionals, researchers and others. I do not undertake any industry-sponsored research, nor am I funded by any corporate interests.

This comment addresses questions pertaining to sugar-sweetened beverages and drinking water in the Dietary Guidelines for Americans. I suggest additions to an existing question, a proposed new question, and suggestions for additional investigatory lenses that can enhance the effectiveness of the Dietary Guidelines.

USDA and HHS Proposed Question on Beverages – 2025-2030 DGAs

Proposed question:

What is the relationship between beverage consumption (beverage patterns, dairy milk and milk alternatives, 100% juice, low- or no-calorie sweetened beverages, sugar-sweetened beverages, coffee, tea, water) and:

- growth, size, body composition, risk of overweight and obesity, and weight loss and maintenance?
- risk of type 2 diabetes?

Proposed additions to the question: Add bullets to include risk of other metabolic disease, cardiovascular disease, and impacts on oral health, and specifically dental decay, to the above question.

Rationale: There is a rapidly expanding science base that links consumption of added sugars to myriad diet-related chronic diseases and shows how the detrimental effects of added sugars go beyond just their inherent calories. Added sugars affect energy utilization within the liver, leading to metabolic disorders such as fatty liver, hyperlipidemia and insulin resistance.[1,2] Excessive consumption of added sugars is a risk factor for cardiovascular disease, even for young children.[3,4] Recent research confirms that consumption of added sugars increased the risk of dental decay in both children and adults.[5,6] Diet-related chronic conditions affect the majority of the U.S. population, with a disproportionate burden on marginalized populations.[7] Reducing consumption of added sugars is a critical strategy.[8] Because sugary drinks are the largest single source of added sugars in the U.S. diet, they must be a key target.[9]

Notably, there is now extensive science showing that several diet-related chronic conditions linked to excessive consumption of added sugars are also leading risk factors for more severe COVID-19 symptoms (and drastically higher health care expenses) and mortality.[10] At the same time, during

[1] Stanhope KL Goran MI, Bosy-Westphal A, King JC, Schmidt LA, et al. Pathways and mechanisms linking dietary components to cardiometabolic disease: thinking beyond calories. *Obesity Review*. 2018. 19(9):1205-1235.

[2] Hieronimus B, et al., Synergistic effects of fructose and glucose on lipoprotein risk factors for cardiovascular disease in young adults. *Metabolism*, 2020. 112: p. 154356.

[3] Eny KM, Jeyakumar N, Dai DWH, Maguire JL et al. 2020. Sugar-containing beverage consumption and cardiometabolic risk in preschool children. *Preventive Medicine Reports* 17:101054.

[4] Vos MB, Kaar JL, Welsh JA et al. 2017. Added sugars and cardiovascular disease risk in children: A scientific statement from the American Heart Association. *Circulation* 135: e1017-e1034

[5] Chi DL, Scott JM. Added Sugar and Dental Caries in Children: A Scientific Update and Future Steps. *Dental Clinics of North America.* 2019. 63:17-33.

[6] Alosaimi N, Bernabé E. Amount and Frequency of Added Sugars Intake and Their Associations with Dental Caries in United States Adults. *International Journal of Environmental Research and Public Health*. 2022; 19(8):4511. https://doi.org/10.3390/ijerph19084511

[7] Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC
At https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf

[8] Vreman RA, Goodell AJ, Rodriguez LA, Porco TC, Lustig RH, Kahn JG. Health and economic benefits of reducing sugar intake in the USA, including effects via non-alcoholic fatty liver disease: a microsimulation model. *British Medical Journal Open*. 2017;7(8):e013543. Published 2017 Aug 3. doi:10.1136/bmjopen-2016-013543.

[9] Malik, V.S., Hu, F.B. The role of sugar-sweetened beverages in the global epidemics of obesity and chronic diseases. *Nature Reviews Endocrinology* **18,** 205–218 (2022). https://doi.org/10.1038/s41574-021-00627-6

[10] Richardson S, Hirsch JS, Narasimhan M, et al. Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area. *Journal of the American Medical Association.* 2020. 323(20):2052–2059.

COVID-19, child obesity increased dramatically.[11] A retrospective study of 430,000 children showed a nearly double rate of Body Mass Index (BMI) increase during 6 pandemic months in 2020 as compared to 6 pre-pandemic months in 2019.[12] Similarly, the rate of increase in adult obesity was higher during the pandemic,[13] alarming given a 2019 modeling study that estimated that if trends (at the time) continued, 48.9% of US adults would have obesity (BMI ≥30) by 2030 while 24.2% would have severe obesity (BMI ≥35).[14]

In order to reduce sugary drink consumption, and to do so equitably, consumers must have a safe, easy and appealing healthy alternative to quench thirst: drinking water.[15] Therefore, this comment focuses on steps the DGA process can take to enable and encourage consumption of water in place of sugar-sweetened beverages.

In its 2021 report to Congress, "Leveraging Federal Programs to Prevent and Control Diabetes and Its Complications," the National Clinical Care Commission wrote,

> *Recommendation 4.4: The National Clinical Care Commission recommends that all relevant federal agencies promote the consumption of water and reduce the consumption of sugar-sweetened beverages in the U.S. population, and that they employ all the necessary tools to achieve these goals, including education, communication, accessibility, water infrastructure, and sugar-sweetened beverage taxation*.[16]

Proposed new question: How effective is the MyPlate graphic in reducing sugary drink intake, and in increasing intake of water and other non-sweet and zero calorie beverages in lieu of sugary drinks? Does the messaging work for the preponderance of U.S. sub-populations?

Rationale: Although consumption of certain sugary beverages is beginning to decrease among some population sectors, there remains much room for improvement in American beverage consumption habits.[17] Improving water access and promotion is especially important for low-income and minority populations that can face water insecurity,[18] report more negative perceptions about tap water,[19] and

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[11] Jenssen, B. P., Kelly, M. K., Powell, M., Bouchelle, Z., Mayne, S. L., & Fiks, A. G. COVID-19 and Changes in Child Obesity. *Pediatrics*. 2021. 147(5).

[12] Lange SJ, Kompaniyets L, Freedman DS, et al. Longitudinal Trends in Body Mass Index Before and During the COVID-19 Pandemic Among Persons Aged 2–19 Years — United States, 2018–2020. *Morbidity and Mortality Weekly Report* 2021;70:1278–1283.

[13] Khubchandani J, Price JH, Sharma S, Wiblishauser MJ, Webb FJ. COVID-19 pandemic and weight gain in American adults: A nationwide population-based study. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy* 2022 Jan;16(1):102392. doi: 10.1016/j.dsx.2022.102392.

[14] Ward ZJ et al. 2019. Projected U.S. State-Level Prevalence of Adult Obesity and Severe Obesity. *New England Journal of Medicine* 381:2440-2450; https://www.nejm.org/doi/full/10.1056/NEJMsa1909301

[15] Patel AI, Hecht CE, Cradock A, Edwards MA, Ritchie LD. Drinking Water in the United States: Implications of Water Safety, Access and Consumption. *Annual Review of Nutrition* 2020;40:345-373.

[16] National Clinical Care Commission. *Report to Congress on Leveraging Federal Programs to Prevent and Control Diabetes and Its Complications*. 2021. At, https://health.gov/about-odphp/committees-workgroups/national-clinical-care-commission/report-congress

[17] Keybridge. *2025 Beverage Calories Initiative: Report on 2017 Progress toward National Calorie Goal*. 2018. http://keybridgedc.com/wp-content/uploads/2018/08/BCI-2017-National-Progress-Report.pdf.

[18] Meehan K, Jurjevich JR, Chun NMJW, Sherrill J. Geographies of insecure water access and the housing–water nexus in US cities. *Proceedings of the National Academy of Sciences* 2020, 117 (46) 28700-28707

[19] Rosinger, A., Patel, A., & Weaks, F. (2022). Examining recent trends in the racial disparity gap in tap water consumption: NHANES 2011–2018. *Public Health Nutrition, 25*(2), 207-213. doi:10.1017/S1368980021002603

have poorer beverage intake habits.[20, 21] Recent evidence suggests that while some are consuming more water, it is typically bottled water;[22] as bottled water generally is not fluoridated and is more costly than tap water, this trend could exacerbate inequities and disparities. Additionally, within some population sectors, adequate hydration is poor;[23,24] of note, underhydration may itself be a risk factor for cardiometabolic health.[25]

The MyPlate nutrition graphic has not been updated since its release after the 2010 DGAs were published. In its 2021 report to Congress, the National Clinical Care Commission also wrote,

Recommendation 4.4a. USDA should add a symbol for drinking water to the MyPlate graphic and increase water promotion messaging in all consumer-facing materials issued by its Center for Nutrition Policy Promotion. Water is not currently depicted on the USDA MyPlate.

Canada is the most recent country to add an icon for drinking water to its nutrition guidance graphic.[26] Recent studies provide insights into messaging strategies to for healthy hydration education.[27,28,29]

Additional recommendation: I further recommend that the Departments add questions to tease out inequities and disparities.

Rationale and examples: In light of the significant disparities in beverage consumption habits as well as in the health impacts of added sugars, I suggest that these, and all, questions should include equity-related concerns that are examined as part of the planned systematic reviews within each topic area. For example,

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[20] Bleich, S.N., Vercammen, K.A., Koma, J.W. and Li, Z. (2018), Trends in Beverage Consumption Among Children and Adults, 2003-2014. *Obesity*, 26: 432-441.

[21] Rosinger AY, Bethancourt H, Francis LA. 2019. Association of Caloric Intake from Sugar-Sweetened Beverages With Water Intake Among US Children and Young Adults in the 2011-2016 National Health and Nutrition Examination Survey. *Journal of the American Medical Association Pediatrics* 173(6), 602-604.

[22] Rosinger AY. Using Water Intake Dietary Recall Data to Provide a Window into US Water Insecurity. 2022. *The Journal of Nutrition* 152 (5):1263–1273, https://doi.org/10.1093/jn/nxac017.

[23] Brooks CJ, Gortmaker SL, Long MW, Cradock AL, Kenney EL. Racial/Ethnic and Socioeconomic Disparities in Hydration Status Among US Adults and the Role of Tap Water and Other Beverage Intake. *American Journal of Public Health* 107, 1387_1394, https://doi.org/10.2105/AJPH.2017.303923

[24] Kenney EL, Long MW, Cradock AL, Gortmaker SL. Prevalence of Inadequate Hydration Among US Children and Disparities by Gender and Race/Ethnicity: National Health and Nutrition Examination Survey, 2009-2012. *American Journal of Public Health*. 2015;105(8):e113–e118

[25] Jacques PF, Rogers G, Stookey JD, Perrier ET. Water Intake and Markers of Hydration Are Related to Cardiometabolic Risk Biomarkers in Community-Dwelling Older Adults: A Cross-Sectional Analysis. *The Journal of Nutrition* 2021 Oct 1;151(10):3205-3213. doi: 10.1093/jn/nxab233.

[26] National Drinking Water Alliance. 2019. "Canada Stresses the Importance of Drinking Water in New Food Guide." At, https://www.drinkingwateralliance.org/single-post/2019/01/28/canada-stresses-the-importance-of-drinking-water-in-new-food-guide

[27] McCarley, S., López-Ríos, M., Burgos Gil, R., Turner, M. M., Cleary, S. D., Edberg, M., & Colón-Ramos, U. (2021). Using a Community-Based Participatory Mixed Methods Research Approach to Develop, Evaluate, and Refine a Nutrition Intervention to Replace Sugary Drinks with Filtered Tap Water among Predominantly Central-American Immigrant Families with Infants and Toddlers: The Water Up @Home Pilot Evaluation Study. *Nutrients*, *13*(9), 2942. https://doi.org/10.3390/nu13092942

[28] Grummon AH, Sokol RL, Goodman D, Hecht CA, Salvia M, Musicus AA, Patel AI. Storybooks About Healthy Beverage Consumption: Effects in an Online Randomized Experiment With Parents. *American Journal of Preventive Medicine*, 20 October 2021. DOI: https://doi.org/10.1016/j.amepre.2021.07.016

[29] Krieger J, Kwon T, Rudy Ruiz, Lina Pinero Walkinshaw, Jiali Yan, and Christina A. Roberto. 2021. Countermarketing About Fruit Drinks, Alone or With Water Promotion: A 2019 Randomized Controlled Trial in Latinx Parents. *American Journal of Public Health* 111, 1997_2007,https://doi.org/10.2105/AJPH.2021.306488

- "How does this relationship vary across different demographics (race, ethnicity, disability, income, sexual orientation, gender identity, etc.)?"
- "What are the environmental, systemic, and structural factors that contribute to or impact this relationship across different demographics?"

Additional recommendation: I further recommend that the Departments add questions related to policy, systems, and environmental (PSE) strategies to support healthy eating and, specifically, healthy beverage choices.

Rationale and examples: Structural racism and many other inequities create barriers to a healthy diet for those in the U.S. and, as pointed out, these also affect beverage consumption. The Biden Administration has made an unprecedented commitment to nutrition security and health equity, making this an opportune time to reincorporate PSE strategies into the DGA, building on the content from 2015, but with much greater attention to health equity. Thus, I recommend the addition of questions that prompt policy, systems and environmental strategies that can support healthy eating.

For example, the Report of the 2015 Dietary Guidelines Advisory Committee included specific suggestions of strategies to encourage the consumption of water in place of the sugary beverages:

- "Free, clean water should be available in public settings, as well as childcare facilities, schools, worksites, publicly funded athletic stadiums and arenas, transportation hubs (e.g., airports) and other community places and should be promoted in all settings where beverages are offered;"[30]
- "Make water accessible in public settings, childcare facilities, schools, worksites and other community places where beverages are offered."[31]

Below are some suggestions of PSE questions that are modeled from questions reviewed and answered by the 2015 DGAC.

Drinking Water Access:

- What is the relationship between access to safe and appealing drinking water and individuals' beverage intake and quality?
- What is the relationship between access to safe and appealing drinking water and socio-economic characteristics?
    - For example, Meehan et al. describe inequities in access to safe drinking water in North America,[32] while Young et al. explore the links between water security and food security and nutrition.[33]

Place-Based Strategies:

- What is the impact of school-based approaches on beverage intake, quality, behaviors, and/preferences of school-aged children?

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[30] 2015 Dietary Guidelines Advisory Committee Report. Available at: http://www.health.gov/dietaryguidelines/2015-scientific-report/06-chapter-1/d1-3.asp. Accessed March 8, 2015.

[31] 2015 Dietary Guidelines Advisory Committee Report. Available at: http://health.gov/dietaryguidelines/2015-scientific-report/04-integration.asp. Accessed March 8, 2015.

[32] Meehan K, Jepson W, Harris LM, Wutich A, Beresford M et al. Exposing the myths of household water insecurity in the global north: a critical review. *WIREs Water.* 2020; 7:e1486.

[33] Sera L Young, Edward A Frongillo, Zeina Jamaluddine, Hugo Melgar-Quiñonez, Rafael Pérez-Escamilla, Claudia Ringler, Asher Y Rosinger, Perspective: The Importance of Water Security for Ensuring Food Security, Good Nutrition, and Well-being, *Advances in Nutrition*, Volume 12, Issue 4, July 2021, Pages 1058–1073, https://doi.org/10.1093/advances/nmab003

    - For example, as yet unpublished findings from an NIH-funded school-based study show the promising impact of a drinking water access and promotion intervention on obesity[34]
- What is the impact of worksite-based approaches on the beverage intake, quality, behaviors and/or preference of employees?
    - For example, University of California at San Francisco implemented a ban of sales of sugary drinks in all workplace venues, resulting in significant improvements in markers of health.[35]
- What is the impact of retail-based approaches on the beverage intake, quality, behaviors and/or preference of consumers?
    - For example, in 2021 the City of Berkeley enacted the nation's first healthy checkout policy for stores larger than 2500 sq. feet.[36]
- What is the impact of in-store and online food retail marketing on individuals' beverage intake and quality? Does the impact vary by socioeconomic status?

Labeling:

- What is the impact of labeling strategies (*e.g.*, nutrient warnings, front-of-pack nutrient disclosures) on beverage intake, quality, or behaviors?
    - For example, warning labels on drink dispensers reduced sugary drink intake among college students,[37] while pictorial warning labels on sugary drink packaging had beneficial impacts including reduced parent purchase and decreased parent intention to serve sugary drinks.[38]

Economic:

- What is the impact of economic incentives/disincentives (*e.g.,* excise taxes on sugary drinks) on beverage intake, quality, and behaviors?
    - For example, sugary drink excise taxes may be more acceptable to low-income parents than anticipated.[39]

Marketing:

- What is the impact of marketing on beverage intake, quality, and behaviors and/or preferences of consumers at different life stages?

As the pandemic recedes, this is a critical time to reinforce healthy and science-based nutrition standards to lift *all* Americans onto a trajectory toward better nutrition, oral health and overall health. Enabling and promoting healthy hydration – consuming water in place of sugary drinks – is a low-cost and feasible part of that trajectory.

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[34] Water First! P.c. Anisha Patel, April 2022.

[35] Epel ES, Hartman A, Jacobs LM, et al. Association of a Workplace Sales Ban on Sugar-Sweetened Beverages With Employee Consumption of Sugar-Sweetened Beverages and Health. *Journal of the American Medical Association Internal Medicine.* 2020;180(1):9–16. doi:10.1001/jamainternmed.2019.4434

[36] "Berkeley Implements Nation's First Healthy Foods Checkout Line Ordinance," 1 March 2021, at https://berkeleyhighjacket.com/2021/news/berkeley-implements-nations-first-healthy-foods-checkout-line-ordinance/

[37] Leung CW, Wolfson JA, Hsu R, Soster K, Mangan S, Falbe J, Warning Labels Reduce Sugar-Sweetened Beverage Intake among College Students, *The Journal of Nutrition*, Volume 151, Issue 1, January 2021, Pages 179-185, https://doi.org/10.1093/jn/nxaa305

[38] Hall MG, Grummon AH, Higgins ICA, Lazard AJ, Prestemon CE, Avendaño-Galdamez MI, et al. (2022) The impact of pictorial health warnings on purchases of sugary drinks for children: A randomized controlled trial. *PLoS Medicine* 19(2): e1003885. https://doi.org/10.1371/journal.pmed.1003885

[39] Cannon JS, Farkouh EK, Winett LB, et al. Perceptions of Arguments in Support of Policies to Reduce Sugary Drink Consumption Among Low-Income White, Black and Latinx Parents of Young Children. *American Journal of Health Promotion*. 2022;36(1):84-93. doi:10.1177/08901171211030849

Thank you for this opportunity to provide comments on the proposed questions and topics for the 2025-2030 *Dietary Guidelines for Americans*. Please contact me at ceahecht@ucanr.edu if I can provide additional information.

Sincerely,

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