

The Oral Health Alliance, a 2030 Healthy People Champion, that represents nutrition, oral health education, and public health professional organizations, oral health providers, groups representing community, children, pregnant women, and older adults, industry, and consumer groups, submits this document to justify a change under the Dietary Patterns Across Life Span in the scientific question – What is the relationship between dietary patterns consumed and

Under *Dietary Patterns Across Life Span*

1. Suggesting changes to the proposed question – *What is the relationship between dietary patterns consumed and --*
 - a. Add to list: *Dental caries and dental-related morbidities*

Relevance

In the *Future Directions* section of the 2020 DGAC report, the 2020 Dietary Guidelines Advisory Committee puts forth “oral health” as an important topic that is relevant to diet and nutrition for future Dietary Guidelines. It suggested future committees “investigate a process to identify topics that can be carried forward into a future cycle of the Dietary Guidelines without additional review by the Advisory Committee.” in Part D, Chapter 1, Current Intakes of Food, Beverages, and Nutrients on pages 24 and 25. The 2020 DGAC reviewed and presented the prevalence data on treated and untreated dental caries in US population from 1999-2004. In Chapter 2 Integrating the Evidence, the 2020-25 DGAC recommended that “the translation of the Committee’s scientific review into the Dietary Guidelines for Americans should extend beyond topics incorporated within the specific questions addressed by the Committee and should include related dietary practices that remain of public health concern including those that have been reviewed by previous Committees.” Specifically, the DGAC included “preventing dental caries” among other topics to include in the Dietary Guidelines for Americans.

Oral health and nutrition have a multifaceted relationship – oral infectious diseases, including dental caries, impact the ability to eat healthy foods that meet the DGAs and nutrition status across the lifespan and nutrition and diet can affect the development and integrity of the oral cavity and progression of oral diseases.^{1,2} The World Health Organization Bulletin³ states that “Oral health affects people physically and psychologically and influences how they grow, enjoy life, look, speak, chew, taste food and socialize, as well as their feelings of social well-being.” Dental caries and attendant pain and infection affect weight and nutrition. For example, children of three years of age with nursing caries weighed about 1 kg less than the control children.⁴ The increase in snacking throughout the day in place of three-meals a day raises the risk of obesity⁵ and developing dental caries throughout the life cycle.^{6,7,8,9,10,11,12} Given the current dietary patterns of many Americans, implementing oral health preventive practices, such as brushing, cleaning/flossing between teeth, drinking fluoridated water where available,¹³ and chewing sugar-free gum (a food) to avoid dry mouth and increase saliva flow,^{14,15,16} in daily routines for individuals of all ages is essential to prevent and/or reduce widely experienced dental caries and other oral infectious diseases.

Importance

The 2020-25 Dietary Guidelines included, on page 4 of the *Introduction*, the text “dental caries as one of the diet-related chronic diseases that pose a major public health problem for Americans.” On page 129, in the Older Adult section appears the statement “Good dental health is essential to overall health as well as the ability to chew food properly.” The table below presents the data for CDC Prevalence of Dental Caries and Prevalence data for Obesity in individuals from 2 to over 65 from 1999-2016. Although the recent statistics show a decline in the rate and number of dental caries, an increase in dental caries and other oral diseases is expected as COVID closed down many community efforts on oral health and

many dental offices in under-resourced communities.¹⁷ The 2021 NIDCR publication *Oral Health in America: Advances and Challenges*, describes the fundamentals of how oral health affects the community, overall well-being, and the economy; its summary recommends policy changes to improve oral health and highlights the health disparities experienced by many communities. Preventing dental caries early and throughout life can also improve social interactions, school performance,¹⁸ military readiness and effectiveness,¹⁹ and job opportunities towards healthier communities. Avoiding oral infection resulting from poor oral health may decrease the risk of heart disease, diabetes, dementia, rheumatoid arthritis, and even premature birth.^{20,21}

Dental caries (tooth decay) is a silent epidemic; it is not only the most prevalent and largely preventable oral disease worldwide, but also, it is the most prevalent disease that affects both children and adults in the United States. Dental caries is fully preventable through simple and basic routine dietary and oral health practices. NCHS Data in this table shows that the dental caries rates are high for all age groups, and they begin with the primary teeth and continue through the permanent dentition. Throughout the lifespan, the prevalence of dental caries is close to the prevalence of obesity among 2–5-year-olds and significantly higher than the prevalence of overweight and obesity for all other age groups.

Prevalence of Dental Caries in the U.S. Population United States, National Health and Nutrition Examination Survey, 1999–2004 to 2011–2014 ²²									Prevalence of Obesity 2017–2018 ²³	Prevalence of Obesity and Severe Obesity Among Adults 2017–2018 ²⁴
Age	Percent with dental caries experience (primary teeth)		Percent with untreated dental caries (primary teeth)		Percent with dental caries experience* (permanent teeth)		Percent with untreated dental caries (permanent teeth)		Percent	Percent
	1999-2004	2011-2016	1999-2004	2011-2016	1999-2004	2011-2016	1999-2004	2011-2016		
2-5	27.9	23.3	20.5	10.4					13.4	
6-11	51.5	52.1	27.8	16.4	21.2	17.4	7.7	5.2	20.3	
12-19					59.4	56.8	19.6	16.6	21.2	
20-64					91.6	89.9	25.3	26.1		40.0 (20-39 y.o). 44.8 (40-59 y.o.)
65+					93.0	96.2	18.1	15.9		42.8 (60 plus y.o)
<i>*Includes missing or filled permanent teeth.</i>										

Impact on Federal Programs

Dietary Guidelines provide basic recommendations that have led to modifications in meals served for schools, childcare centers, senior nutrition meals, government food service operations, military rations, places of incarcerations, and more. Recognizing the impact of diet on oral health calls for ensuring the snacking foods and meals minimize the cariogenic foods and maximize the protective foods. Health and nutrition education must be coordinated with the feeding programs to ensure participants incorporate preventive oral hygiene practices throughout the day.

Avoiding Duplication

The recent NIDCR report *Oral Health in America: Advances and Challenges*²⁵ provides several examples of effective dietary, dental hygiene, and behavioral interventions that complement addressing Social Determinants of Health and improvements in access to dental care. It recommends dietary counseling and dental hygiene occur in dental offices. In this document, prevention generally refers to dental sealants and silver diamine fluoride treatments. Because there are no specific recommendations for nutrition in the *Oral Health in American Report*, the 2025-30 DGAs can make specific recommendations to improve dietary intakes, food security, and nutrition security for all ages, ethnic groups, and levels of economic status. The DGAs should include specific advice and guidance about reducing the problems of dry mouth and removing microbial infections from the mouth with simple routine use of brushing with fluoridated toothpaste, cleaning/flossing between the teeth, and chewing sugarfree gum after eating or drinking with a lens of racial equity and cultural practices.

Research Availability

Ample research exists to provide justification for adding *dental caries and dental-related morbidities* to the proposed scientific question *What is the relationship between dietary patterns consumed and other factors*. Inventories of significant and current research linking dietary patterns and oral health will appear on the Oral Health Alliance website, www.oralhealthalliance.com by fall, 2022. The Alliance expects to have a Scoping Review completed by Winter 2022.

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² Moynihan P and Peterson PE. Diet, Nutrition, and Prevention of Dental Diseases *Public Health Nutrition*. 2004 Feb. 7(1A), 201–226,

³ Sheiham A. Oral Health, General Health, and Quality of Life. *Bulletin o World Health Organization*, 2005. 83, (9), 644. World Health Organization

⁴ Acs G, Lodolini G, Kaminski S, Cisneros GJ. Effect of nursing caries on body weight in a pediatric population. *Pediatric Dentistry*. 1992;14:302-5.

⁵ Mattes R. Energy intake and obesity: Ingestive frequency outweighs portion size. *Physiology & Behavior* Volume 134, July 2014;13:110-118.

⁶ Gaudilliere D, Thakur Y, Ku M, Kaur A, Shrestha P, Girod SC. Caries Management By Risk Assessment in a Cleft and Craniofacial Center: The Journal of Craniofacial Surgery 2014;25:e529–36.

⁷ Chaffee BW, Cheng J, Featherstone JDB. Baseline caries risk assessment as a predictor of caries incidence. *Journal of Dentistry* 2015;43:518–24.

⁸ Jain P, Gary JJ. Which is a stronger indicator of dental caries: oral hygiene, food, or beverage? A clinical study. *Gen Dent* 2014;62:63–8.

⁹ Domejean S. Validation of the CDA CAMBRA Caries Risk Assessment — A Six-Year Retrospective Study. *Journal of the California Dental Association* 2011;39:709–15.

¹⁰ Elangovan A, Mungara J, Joseph E. Exploring the relation between body mass index, diet, and dental caries among 6-12-year-old children. *Journal of Indian Society of Pedodontics and Preventive Dentistry* 2012;30:293.

¹¹ Monaghan N. Sugar before bed: a simple dietary risk factor for caries experience. *Community Dental Health* 2017:8–13.

¹² Evans, EW, Hayes, C, Palmer, CA, Bermudez, OI, Naumova, EN, Cohen, SA, Must, A. Development of a Pediatric Cariogenicity Index, *Journal of Public Health Dentistry*. 73, 2013, pp. 179-186.

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- ¹⁵ Dodds MWJ: The oral health benefits of chewing gum. *J Irish Dent Assoc*. 2012; 58(5): 253-261.
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- ¹⁷ Brian Z, Weintraub JA. Oral Health and COVID-19: Increasing the Need for Prevention and Access. *US Public Health Response to COVID-19 and Chronic Disease special supplement*. August 13, 2020. Volume 17.
- ¹⁸ Jackson SL, William VF. et al. Impact of Poor Oral Health on Children's School Attendance and Performance. *AJPH*. 101, no. 10 (October 1, 2011): pp. 1900-1906.
- ¹⁹ Bipartisan Policy Center. 2012. "Lots to lose: How America's health and obesity crisis threatens our Economic Future." AND Simecek JW, Colthirst P, Wojcik BE: "The incidence of dental disease non-battle injuries in deployed U.S. Army personnel." *Mil Med* 2014; 179(6): 666-73.
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- ²² NCHS Oral Health Surveillance Report List of Tables. <https://www.cdc.gov/oralhealth/publications/OHSR-2019-list-of-tables.html>
- ²³ Fryar CD, Carroll MD, Afful J. Prevalence of Overweight, Obesity, and Severe Obesity Among Children and Adolescents Aged 2-19 Years: United States, 1963-1965 Through 2017-2018. NCHS Division of Health and Nutrition Examination Surveys. *Health-e Stat*, Available here <https://www.cdc.gov/nchs/data/hestat/obesity-child-17-18/obesity-child.htm#table2>
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- ²⁵ NIDCR, *Oral Health in America: Advances and Challenges*. December 2021. <https://www.nidcr.nih.gov/sites/default/files/2021-12/Oral-Health-in-America-Advances-and-Challenges.pdf#page=59>