

Beyond a Nice Smile

Links Between Oral Health and Overall Health for Older Adults

Oral health is about more than just having a nice smile.

Oral health includes the health of the teeth and gums, and the ability to speak and chew comfortably. Common diseases that can affect our oral health include cavities (known as dental caries or tooth decay), gum disease (periodontitis), and oral cancer. Oral health is linked to overall health, self-esteem, and quality of life in many ways you may not have realized.

Medications

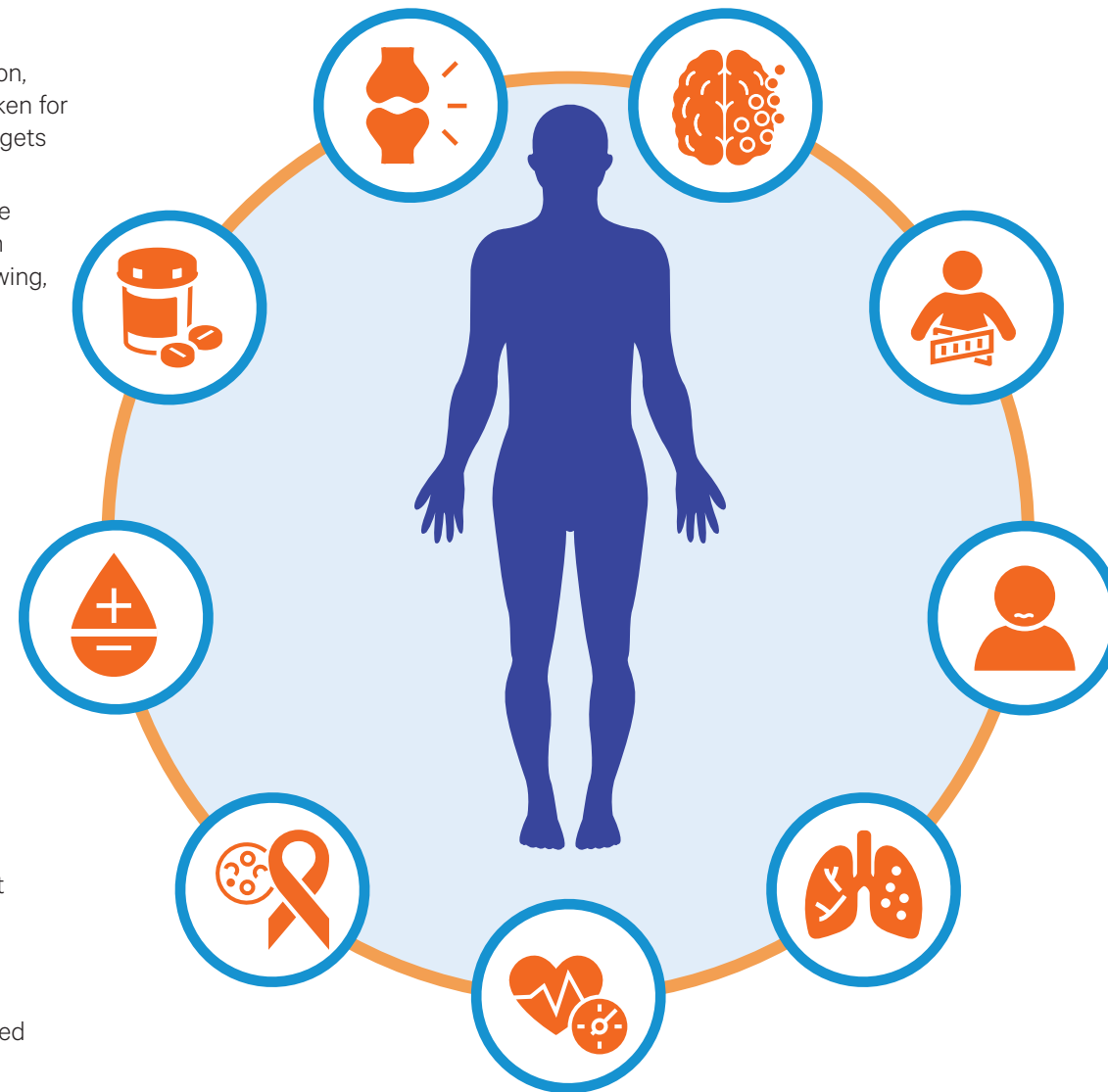
- More than four out of five older adults have at least one chronic health condition, and more than half have at least two chronic conditions.¹ Many medications taken for chronic health conditions cause dry mouth (xerostomia), and dry mouth often gets worse with each additional medication taken.²
- Dry mouth, when not managed, can cause extensive tooth decay, leading to the need for more fillings, root canals, and extractions.³ Unmanaged dry mouth can also lead to oral infections and lesions, as well as difficulty chewing and swallowing, which in turn can result in poor nutrition.⁴

Diabetes

- Having diabetes can raise the risk of developing gum disease by 86%, and individuals with diabetes have gum disease that is more severe than people without diabetes.^{5,6}
- Untreated gum disease makes it harder for people with diabetes to manage their blood glucose levels.⁷
- People who have diabetes and also wear dentures are likely to develop sores underneath their dentures due to slower wound healing.⁸
- Treating gum disease is linked to lower diabetes-related health care costs.⁹

Cancer

- Women with gum disease, and those missing teeth due to gum disease, are at increased risk for breast cancer.¹⁰⁻¹³
- Men with gum disease have a higher risk of developing prostate cancer compared to those without gum disease.^{14,15}
- Poor oral hygiene, including infrequent toothbrushing and dental visits, is linked to an increased risk of developing oral cancer.¹⁶⁻¹⁸



Arthritis

- Having gum disease and associated tooth loss is linked with having rheumatoid arthritis.¹⁹⁻²¹ There is evidence that the risk of rheumatoid arthritis increases with the number of teeth lost due to gum disease.^{22,23}

Dementia

- Having gum disease significantly raises the risk of developing Alzheimer's disease.²⁴
- Individuals who have lost teeth or have difficulty eating and swallowing have an increased risk of developing problems with memory and thinking (cognitive decline).²⁵

Obesity

- Evidence exists that individuals who brush their teeth once a day or less are more likely to develop obesity than those who brush their teeth more often.²⁶ There is a link between obesity and gum disease.²⁷
- Consuming sugary foods and beverages is linked to both obesity and tooth decay in children and adults.^{28,29}

Mental Health

- It is estimated that about one in six adults aged 60 and older experience some kind of mental health condition.³⁰ Adults with depression are more likely to report that they brush their teeth less than once per day, are more likely to experience oral health problems, and are less likely to seek dental care compared to adults without depression.^{31,32}
- Individuals with depression often experience less energy and motivation, which can negatively affect their ability to engage in oral hygiene habits like toothbrushing and flossing. This decrease in oral hygiene can lead to tooth decay and gum disease.³³
- Medications used to treat mental health conditions often cause dry mouth, which, when untreated, can cause tooth decay, oral lesions and infections, and difficulty eating.^{3,4}

Respiratory Health

- Having preventive dental care, such as cleanings, before a stay in the hospital is linked to a lower risk of developing pneumonia while in the hospital.³⁴
- In frail elders, the risk of death from aspiration pneumonia is decreased by improving the seniors' oral health through tooth brushing.³⁵

High Blood Pressure and Heart Disease

- The risk of developing high blood pressure (hypertension) is significantly higher in adults who have lost teeth³⁶ and in people with gum disease.³⁷
- Evidence exists for a relationship between gum disease and an increased risk of heart (cardiovascular) disease.³⁸

Recommendations

- Talk with your patients about their oral health at every visit, including any problems they may be having with their teeth, mouth, or gums. If your patient does not have a dentist whom they see regularly, help them identify an oral health provider as well as options for affordable dental care.
- When treating patients with oral health problems and chronic medical conditions, communicate regularly with the patients' oral health providers to ensure that the oral health of your patients is being maintained. Priority should be given to treatment for and management of conditions like periodontal disease and dental caries.

References

1. "Talking with Your Older Patients," National Institute on Aging, accessed April 6, 2023, <https://www.nia.nih.gov/health/talking-your-older-patients>.
2. Giulio Fortuna, Sarah Whitmire, Kathleen Sullivan, Ivan Alajbeg, Ana Andabak-Rogulj, Anne Marie Lynge Pedersen, Arjan Vissink, Olga di Fede, Massimo Aria, Derk Jan Jager, Jenene Noll, Siri Beier Jensen, Andy Wolff, and Michael T. Brennan, "Impact of Medications on Salivary Flow Rate in Patients with Xerostomia: A Retrospective Study by the Xeromeds Consortium," *Clinical Oral Investigations* 27, no. 1 (January 2023): 235–248. DOI: 10.1007/s00784-022-04717-1
3. Katherine Chiu-Man Leung and Chun-Hung Chu, "Dental Care for Older Adults," *International Journal of Environmental Research and Public Health* 20, no. 1 (January 2022): 214. DOI: 10.3390/ijerph20010214
4. "Dry Mouth," Mayo Clinic, accessed April 6, 2023, <https://www.mayoclinic.org/diseases-conditions/dry-mouth/symptoms-causes/syc-20356048>.
5. Giovanna L. Di Domenico, Margherita Minoli, Nicola Discepoli, Alessandro Ambrosi, and Massimo de Sanctis, "Effectiveness of Periodontal Treatment to Improve Glycemic Control: An Umbrella Review," *Acta Diabetologica* 60, no. 1 (January 2023): 101–113. DOI: 10.1007/s00592-022-01991-z
6. Philip M. Preshaw, A. L. Alba, David Herrera, Søren Jepsen, Antonis Konstantinidis, Konstantinos Makrilakis, and R. Taylor, "Periodontitis and Diabetes: A Two-Way Relationship," *Diabetologia* 55, no. 1 (2012): 21–31. DOI: 10.1007/s00125-011-2342-y
7. Filippo Graziani, Stefano Gennai, Anna Solini, and Morena Petrini, "A Systematic Review and Meta-Analysis of Epidemiologic Observational Evidence on the Effect of Periodontitis on Diabetes: An Update of the EFP-AAP Review," *Journal of Clinical Periodontology* 45, no. 2 (February 2018): 167–187. DOI: 10.1111/jcpe.12837
8. Barbara Dorocka-Bobkowska, Dorota Zozulinska-Ziolkiewicz, Bogna Wierusz-Wysocka, Wieslaw Hedzelek, Anna Szumala-Kakol, and Ejvind Budtz-Jørgensen, "Candida-Associated Denture Stomatitis in Type 2 Diabetes Mellitus," *Diabetes Research and Clinical Practice* 90, no. 1 (October 2010): 81–86. DOI: 10.1016/j.diabres.2010.06.015
9. Madhuli Thakkar-Samtani, Lisa J. Heaton, Abigail L. Kelly, Shelly Dionne Taylor, Linda Vidone, and Eric P. Tranby, "Periodontal Treatment Associated with Decreased Diabetes Mellitus-Related Treatment Costs: An Analysis of Dental and Medical Claims Data," *The Journal of the American Dental Association* 154, no. 4 (April 2023): 283–292. DOI: 10.1016/j.adaj.2022.12.011
10. Ngozi N. Nwizu, James R. Marshall, Kirsten Moysich, Robert J. Genco, Kathleen M. Hovey, Xiaodan Mai, Michael J. LaMonte, Jo L. Freudenheim, and Jean Wactawski-Wende, "Periodontal Disease and Incident Cancer Risk among Postmenopausal Women: Results from the Women's Health Initiative Observational Cohort," *Cancer Epidemiology, Biomarkers & Prevention* 26, no. 8 (August 2017): 1255–1265. DOI: 10.1158/1055-9965.EPI-17-0212
11. Birgitta Söder, Maha Yakob, Jukka H. Meurman, Leif C. Andersson, Björn Klinge, and Per-Östen Söder, "Periodontal Disease May Associate with Breast Cancer," *Breast Cancer Research and Treatment* 127, no. 2 (June 2011): 497–502. DOI: 10.1007/s10549-010-1221-4
12. Jo L. Freudenheim, Robert J. Genco, Michael J. LaMonte, Amy E. Millen, Kathleen M. Hovey, Xiaodan Mai, Ngozi Nwizu, Christopher A. Andrews, and Jean Wactawski-Wende, "Periodontal Disease and Breast Cancer: Prospective Cohort Study of Postmenopausal Women," *Cancer Epidemiology, Biomarkers & Prevention* 25, no. 1 (2016): 43–50. DOI: 10.1158/1055-9965.EPI-15-0750
13. Tingting Shi, Min Min, Chenyu Sun, Yun Zhang, Mingming Liang, and Yehuan Sun, "Periodontal Disease and Susceptibility to Breast Cancer: A Meta-Analysis of Observational Studies," *Journal of Clinical Periodontology* 45, no. 9 (September 2018): 1025–1033. DOI: 10.1111/jcpe.12982
14. Zhenlang Guo, Chiming Gu, Siyi Li, Shu Gan, Yuan Li, Songtao Xiang, Leiliang Gong, and Shusheng Wang, "Periodontal Disease and the Risk of Prostate Cancer: A Meta-Analysis of Cohort Studies," *International Brazilian Journal of Urology* 47, no. 6 (November–December 2021): 1120–1130. DOI: 10.1590/S1677-5538.IBJU.2020.0333
15. Yali Wei, Yongjin Zhong, Yan Wang, and Ruijie Huang, "Association Between Periodontal Disease and Prostate Cancer: A Systematic Review and Meta-Analysis," *Medicina Oral, Patologia Oral y Cirugia Bucal* 26, no. 4 (July 2021): e459–e465. DOI: 10.4317/medoral.24308
16. Rachit Mathur, Hitesh Rajendra Singhavi, Akshat Malik, Sudhir Nair, and Pankaj Chaturvedi, "Role of Poor Oral Hygiene in Causation of Oral Cancer — A Review of Literature," *Indian Journal of Surgical Oncology* 10, no. 1 (March 2019): 184–195. DOI: 10.1007/s13193-018-0836-5
17. Xue Bai, Chunyan Cui, Jiajia Yin, Hua Li, Qiwei Gong, Bo Wei, and Yifan Lu, "The Association Between Oral Hygiene and Head and Neck Cancer: A Meta-Analysis," *Acta Odontologica Scandinavica* (December 2022): 1–22. DOI: 10.1080/00016357.2022.2158129
18. Dana Hashim, Samantha Sartori, Paul Brennan, Maria P. Curado, Victor Wunsch-Filho, Kimon Divaris, Andrew F. Olshan, Jose P. Zavallos, Deborah M. Winn, Silvia Franceschi, Xavier Castellsagué, Jolanta Lissowska, Peter Rudnai, Keitaro Matsuo, Hal Morgenstern, Chu Chen, Thomas L. Vaughan, Jonathan N. Hofmann, Gypsyamber D'Souza, Robert I. Haddad, H. Wu, Yuan-Chin Lee, Mia Hashibe, Carlo La Vecchia, and Paolo Boffetta, "The Role of Oral Hygiene in Head and Neck Cancer: Results from International Head and Neck Cancer Epidemiology (INHANCE) Consortium," *Annals of Oncology* 27, no. 8 (August 2016): 1619–1625. DOI: 10.1093/annonc/mdw224
19. Paola de Pablo, Thomas Dietrich, and Timothy E. McAlindon, "Association of Periodontal Disease and Tooth Loss with Rheumatoid Arthritis in the US Population," *The Journal of Rheumatology* 35, no. 1 (January 2008): 70–76.
20. Mai Hussein, Youssef M. K. Farag, and Stephen Sonis, "Differential Associations of Rheumatoid Arthritis and Periodontitis or Tooth Loss: A Cross-Sectional Study," *Journal of Clinical Periodontology* 50, no. 3 (March 2023): 307–315. DOI: 10.1111/jcpe.13757
21. Philip Bender, Walter B. Bürgin, Anton Sculean, and Sigrun Eick, "Serum Antibody Levels Against Porphyromonas Gingivalis in Patients with and Without Rheumatoid Arthritis — A Systematic Review and Meta-Analysis," *Clinical Oral Investigations* 21, no. 1 (January 2017): 33–42. DOI: 10.1007/s00784-016-1938-5
22. Ryan T. Demmer, Jerry A. Molitor, David R. Jacobs, Jr., and Bryan S. Michalowicz, "Periodontal Disease, Tooth Loss and Incident Rheumatoid Arthritis: Results from the First National Health and Nutrition Examination Survey and Its Epidemiological Follow-up Study," *Journal of Clinical Periodontology* 38, no. 11 (November 2011): 998–1006. DOI: 10.1111/j.1600-051X.2011.01776.x
23. David A. Felton, "Complete Edentulism and Comorbid Diseases: An Update," *Journal of Prosthodontics* 25, no. 1 (January 2016): 5–20. DOI: 10.1111/jopr.12350
24. Chia-Yen Lee, Chuen-Chau Chang, Chao-Shun Lin, Chun-Chieh Yeh, Chaur-Jong Hu, Ching-Zong Wu, Ta-Liang Chen, and Chien-Chang Liao, "Risk of Dementia in Patients with Periodontitis and Related Protective Factors: A Nationwide Retrospective Cohort Study," *Journal of Clinical Periodontology* 47, no. 12 (December 2020): 1428–1436. DOI: 10.1111/jcpe.13372
25. Miyuki Nagatani, Tomoki Tanaka, Bo-Kyung Son, Jun Kawamura, Junko Tagomori, Hirohiko Hirano, Maki Shirobe, and Katsuya Iijima, "Oral Frailty as a Risk Factor for Mild Cognitive Impairment in Community-Dwelling Older Adults: Kashiwa Study," *Experimental Gerontology* 172 (February 2023): 112075. DOI: 10.1016/j.exger.2022.112075
26. Michiko Furuta, Kenji Takeuchi, Toru Takeshita, Akihiko Tanaka, Shino Suma, Takashi Shinagawa, Yoshihiro Shimazaki, and Yoshihisa Yamashita, "Longitudinal Associations of Toothbrushing with Obesity and Hyperglycemia," *Journal of Epidemiology* 30, no. 12 (December 2020): 556–565. DOI: 10.2188/jea.JE20190165
27. Mayte Martinez-Herrera, Javier Silvestre-Rangil, and Francisco-Javier Silvestre, "Association Between Obesity and Periodontal Disease. A Systematic Review of Epidemiological Studies and Controlled Clinical Trials," *Medicina Oral, Patologia Oral y Cirugia Bucal* 22, no. 6 (November 2017): e708–e715. DOI: 10.4317/medoral.21786
28. Giles Barrington, Shahrukh Khan, Katherine Kent, David S. Brennan, Leonard A. Crocombe, and Silvana Bettiol, "Obesity, Dietary Sugar and Dental Caries in Australian Adults," *International Dental Journal* 69, no. 5 (October 2019): 383–391. DOI: 10.1111/idj.12480
29. Ling-Wei Li, Hai Ming Wong, and Colman P. McGrath, "Longitudinal Association Between Obesity and Dental Caries in Adolescents," *The Journal of Pediatrics* 189 (October 2017): 149–154. DOI: 10.1016/j.jpeds.2017.06.050
30. "Mental Health of Older Adults," World Health Organization, accessed April 6, 2023, <https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults>.
31. CareQuest Institute for Oral Health. *How Depression Is Linked to Oral Health*. Boston, MA: May 2022.
32. Tamanna Tiwari, Abigail Kelly, Cameron L. Randall, Eric Tranby, and Julie Frantve-Hawley, "Association Between Mental Health and Oral Health Status and Care Utilization," *Frontiers in Oral Health* 2 (February 2022): 732882. DOI: 10.3389/froh.2021.732882
33. Katarzyna Skośkiewicz-Malinowska, Barbara Malicka, Marek Ziętek, and Urszula Kaczmarek, "Oral Health Condition and Occurrence of Depression in the Elderly," *Medicine* 97, no. 41 (October 2018): e12490. DOI: 10.1097/MD.00000000000012490
34. Dian Baker, Karen K. Giuliano, Madhuli Thakkar-Samtani, Frank A. Scannapieco, Michael Glick, Marcos I. Restrepo, Lisa J. Heaton, and Julie Frantsve-Hawley, "The Association Between Accessing Dental Services and Nonventilator Hospital-Acquired Pneumonia among 2019 Medicaid Beneficiaries," *Infection Control & Hospital Epidemiology* (July 2022): 1–3. DOI: 10.1017/ice.2022.163
35. Frauke Müller, "Oral Hygiene Reduces the Mortality from Aspiration Pneumonia in Frail Elders," *Journal of Dental Research* 94, no. 3, suppl. (March 2015): 14S–16S. DOI: 10.1177/0022034514552494
36. Kehui Xu, Weiwei Yu, Yuanyuan Li, Yutao Li, Qianqian Wan, Li Chen, Yan Dong, Franklin R. Tay, and Lina Niu, "Association Between Tooth Loss and Hypertension: A Systematic Review and Meta-Analysis," *Journal of Dentistry* (August 2022): 104178. DOI: 10.1016/j.jdent.2022.104178
37. Burak G. Yildirim, Cemilener Aksit, Mesut Mutlu, Mari Ainola, Kari K. Eklund, Jaakko Leskelä, Pirkko Pussinen, and Arzu Beklen, "Severity and Progression Rate of Periodontitis Are Associated with an Increased Risk of Hypertension of Patients Attending a University Clinic," *BMC Oral Health* 22, no. 1 (December 2022): 627. DOI: 10.1186/s12903-022-02637-w
38. Aleksandar Jakovljevic, Henry F. Duncan, Venkateshbabu Nagendrababu, Jelena Jaćimović, Jelena Milašin, and Paul M. H. Dummer, "Association Between Cardiovascular Diseases and Apical Periodontitis: An Umbrella Review," *International Endodontic Journal* 53, no. 10 (October 2020): 1374–1386. DOI: 10.1111/iej.13364

Suggested Citation:

CareQuest Institute for Oral Health. *Beyond a Nice Smile: Links Between Oral Health and Overall Health for Older Adults*. Boston, MA: CareQuest Institute, May 2023.

Copyright © 2023 CareQuest Institute for Oral Health, Inc.