



Exploring Adult Oral Health

Texas Behavioral Risk Factor Surveillance System, 2016

Introduction

Oral health is essential to general health and well-being in Americans.¹ Yet, many older adults experience poor oral health.² Furthermore, access to dental services is essential to promoting and maintaining good oral health.² However, those who need dental care the most are often the least likely to receive it.²

The presence of extensive tooth loss, untreated caries, and untreated periodontal disease among older adults³ indicates that a substantial number may not have access to effective interventions to prevent or control oral disease. Data from the 2009 and 2010 National Health and Nutrition Examination Survey (NHANES) reports over 47 percent of U.S. adults, representing 64.7 million adults, had periodontitis, distributed as 8.7 percent, 30 percent, and 8.5 percent with mild, moderate, and severe periodontitis, respectively.⁴ For adults aged 65 years and older, 64 percent had either moderate or severe periodontitis.⁴

In 2012, Wall et al. examined trends in the utilization of oral health services in the United States from 1997 to 2010 by age and poverty level.⁵ As reported, the utilization rate for non-elderly adults showed a steady decrease from 66.8 percent in 2000 to 61.8 percent in 2010.⁵ The utilization rate for the elderly also decreased from 73.1 percent in 1997 to 69.6 percent in 2010.⁵

In a cross-sectional study analyzing national data from the U.S. Behavioral Risk Factor Surveillance System (BRFSS) telephone survey, poor dentition and lack of dental care were associated with worse health-related quality of life in older adults (aged ≥ 65 years) with diabetes mellitus.⁶ Furthermore, the association of dental health behaviors and dentition on all-cause mortality in a large cohort of elderly adults showed a decreased risk of mortality with



several oral health behaviors, suggesting maintenance of good oral hygiene is an important health promoter in aging populations.⁷

Methods

BRFSS is the nation's premier system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. BRFSS collects data in all 50 states as well as the District of Columbia and three U.S. territories.⁸

Currently, there is a wide sponsorship of the BRFSS survey, including most divisions in the CDC National Center for Chronic Disease Prevention and Health Promotion; other CDC centers; and federal agencies, such as the Health Resources and Services Administration, Administration on Aging, Department of Veterans Affairs, and Substance Abuse and Mental Health Services Administration. With technical and methodological assistance from CDC, state health departments contract with telephone call centers to conduct the BRFSS surveys continuously through the year using a standardized core questionnaire and optional modules, plus additional state-added questions.

The federal government, state governments, and many universities, private organizations, and researchers use BRFSS data to identify the frequency of health behaviors and conditions, track progress toward health objectives, evaluate the effects of disease prevention activities, and rapidly assess emerging health problems.

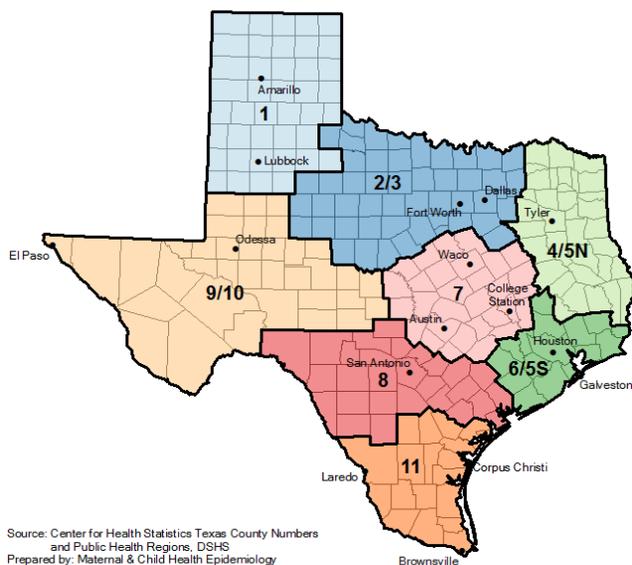
This report explores several aspects of oral health in Texas adults. It summarizes access to dental care in adults, age ≥ 18 , extraction of natural teeth due to tooth decay or gum disease in adults age ≥ 65 , and finally, traveling for dental surgery or routine dental care to countries outside the U.S. Data were weighted so that the results would be generalizable to the general population and analyzed using the 2016 Texas BRFSS public use data file using SAS (v. 9.4).



TEXAS
Health and Human
Services

Texas Department of State
Health Services

Texas Public Health Regions



Source: Center for Health Statistics Texas County Numbers
and Public Health Regions, DSHS
Prepared by: Maternal & Child Health Epidemiology

A state map is provided to identify public health regions (PHR) in Texas. As shown, each of the 254 Texas counties are assigned to one of eight PHRs. Because of the immense size of Texas, the distance that some individuals, especially those living in rural counties, must travel to receive health care services can be a significant challenge to accessing and receiving those services.⁹ Counties in the border/non-border subgroup in this report are designated as Border or Non-

Border according to Article 4 of the La Paz Agreement of 1983.¹⁰

Results

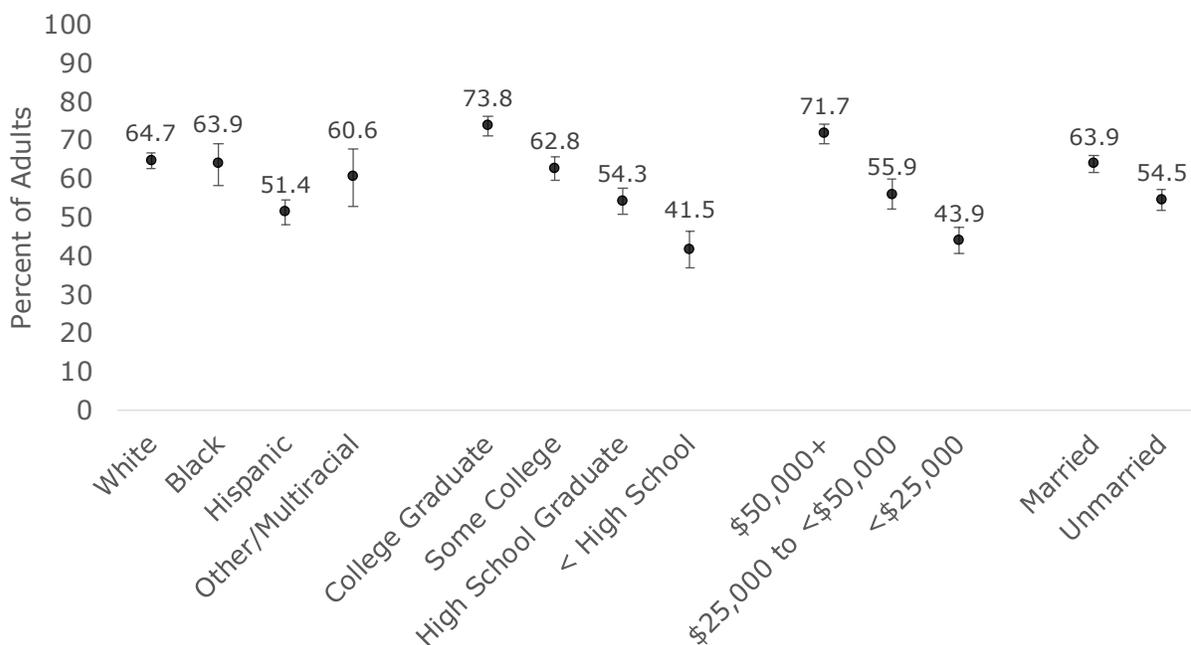
Dental Visit in Past Year by Demographics

Figure 1 presents results for select demographics and dental visits in the past year for adults, ≥ 18 years of age, in 2016 in Texas who were asked 'How long has it been since you last visited a dentist or a dental clinic for any reason?'. Overall, the prevalence for adults having a dental visit within the past year was 59.4 percent, with 2.3 percent reporting they had never had a dental visit. Disparities exist in dental visits across race/ethnic groups in Texas. As shown, 64.7 percent of White Non-Hispanic and 63.9 percent of Black Non-Hispanic adults in Texas were significantly more likely to report a dental visit in the past year compared to 51.4 percent of Hispanic adults ($p \leq 0.0001$). Texas adults with a household income greater than \$50,000 were significantly more likely to report a dental visit in the past year compared to adults with a household income \$50,000 or less ($p \leq 0.0001$). Nearly 64 percent of married adults in Texas indicated they had a dental visit in the past year compared to 54.5 percent of unmarried adults ($p \leq 0.0001$). Additionally, although data are not shown, adults with a normal body mass index (BMI) were more likely to report having a dental visit than adults with an overweight or obese BMI, and



adults who were employed were significantly more likely to report a dental visit than adults who were unemployed ($p=0.02$).

Figure 1: Percent of Adults, Age ≥ 18 , with a Dental Visit in Past Year by Select Demographics, Texas BRFSS 2016



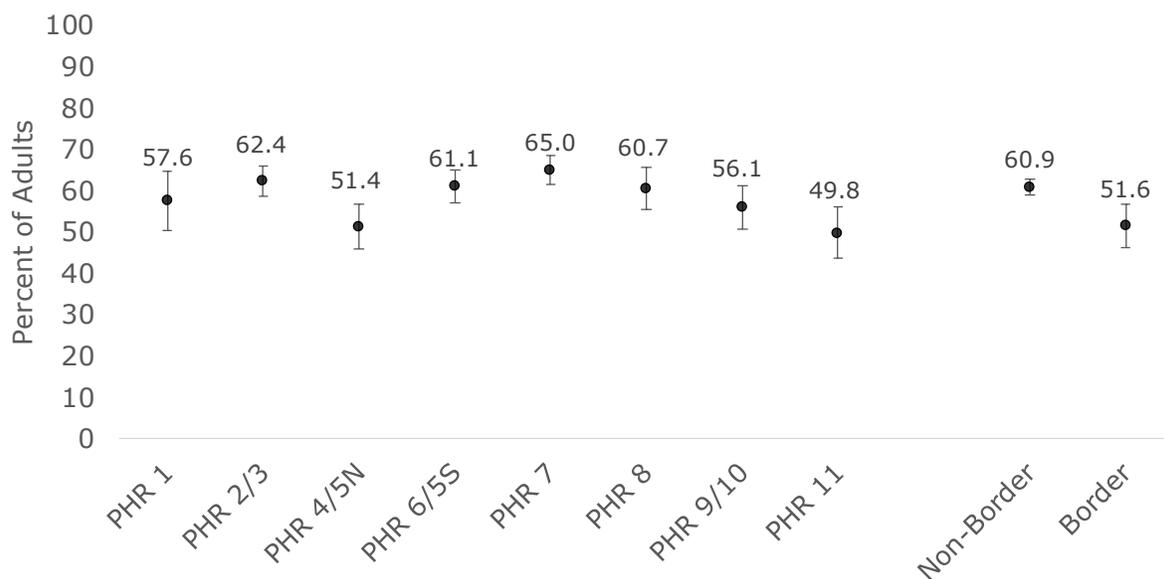
Error bars represent 95% confidence intervals for each prevalence estimate

Dental Visit in Past Year by Geographic Location

Figure 2 shows differences in the prevalence of dental visits in the past year across PHRs and border regions for adults in 2016. As shown, approximately 61 percent of Texas adults who live in a non-border county, were significantly more likely to report a dental visit in the past year compared with 51.6 percent of adults who live in a border county ($p\leq 0.001$). The prevalence of dental visits varied by PHR in Texas, with adults in PHR 7 significantly more likely to report a dental visit in the past year compared to adults in PHR 4/5N or PHR 11 ($p\leq 0.0001$).



Figure 2: Percent of Adults, Age ≥ 18 , with a Dental Visit in Past Year by Select Geographic Locations, Texas BRFSS 2016



Error bars represent 95% confidence intervals for each prevalence estimate

PHR – Public Health Region

Border Region defined as Border or Non-Border according to Article 4 of the La Paz Agreement of 1983.

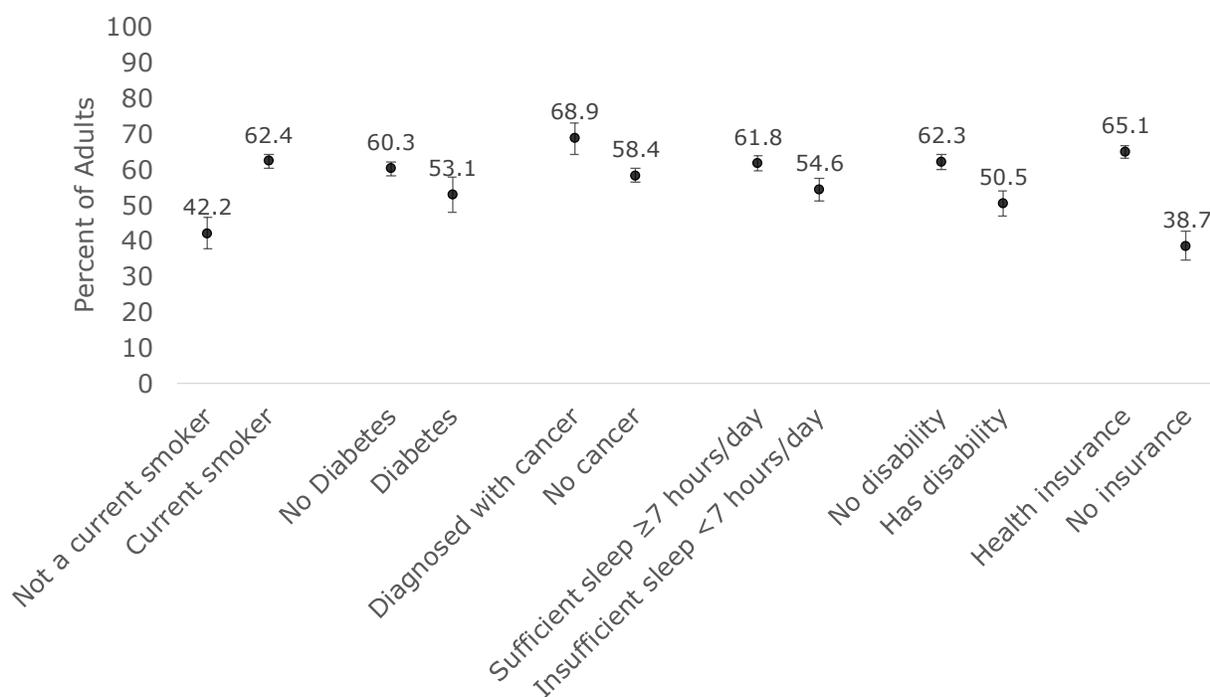
Dental Visit in Past Year by Health Risk Factors

Figure 3 displays results for select risk factors and dental visits in the past year for adults, ≥ 18 years of age, in Texas for 2016. An estimated 62.4 percent of smokers reported a dental visit in the past year compared to 42.2 percent of non-smokers. Furthermore, Texas adults who currently smoked ($p \leq 0.0001$), were diagnosed with any cancer ($p \leq 0.0001$), slept ≥ 7 hours a day ($p \leq 0.001$), had no disabilities, or health problems requiring use of special equipment ($p \leq 0.0001$), and/or had health insurance ($p \leq 0.0001$) were significantly more likely to have had a dental visit in the past year compared to their counterparts in each of these subgroups. Although the results are not shown, adults who reported having a personal doctor were significantly more likely to also report a dental visit in the past year ($p \leq 0.0001$). Additionally, adults who reported poor physical or mental health that kept



them from doing usual activities for at least five days in the past month, were blind or had serious difficulty seeing, or were limited in any way in any activities because of physical, mental, or emotional problems were less likely to report a dental visit in the past year. No significant differences were reported in the prevalence of dental visits by Texas adults with doctor diagnosed high blood pressure.

Figure 3: Percent of Adults, Age ≥18, with a Dental Visit in Past Year by Select Risk Factors, Texas BRFSS 2016



Error bars represent 95% confidence intervals for each prevalence estimate

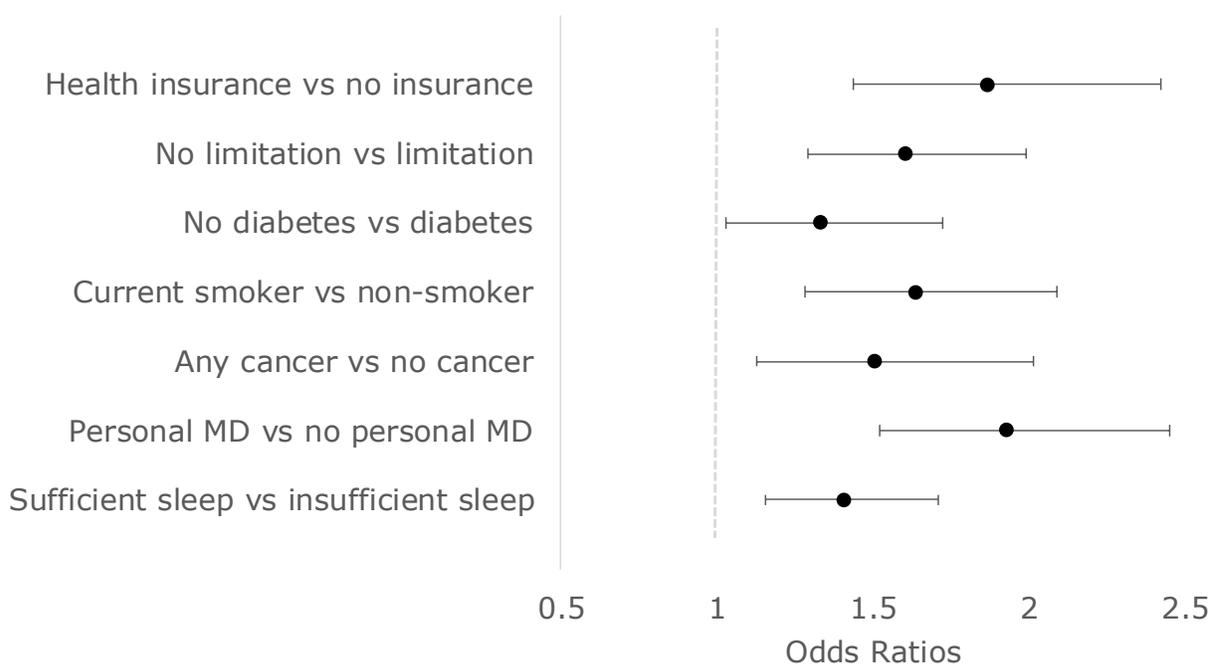
Association between Dental Visits and Health Risk Factors

Figure 4 presents the association between select risk factors and having a dental visit in the past year for Texas adults, 18 years or older. Adjusting for gender, race/ethnicity, age, education, and marital status, adults who reported having health insurance, had 1.9 times higher odds of having a dental visit in the past year compared to those without health insurance ($p \leq 0.0001$). Adults who did not report a disability had 1.6 times higher odds of having a dental visit in the past year compared to adult who did report a disability



($p \leq 0.0001$). Compared to non-smokers, current smokers had 1.6 times higher odds of having a dental visit in the past year. Adults reporting any cancer had 1.5 times higher odds of having a dental visit compared to those reporting no cancer. Adults who reported having sufficient sleep (≥ 7 hours a day) had 1.4 times higher odds of having a dental visit in the past year compared to those who reported insufficient sleep (< 7 hours a day) ($p \leq 0.001$). Compared to adults that do not have a personal doctor, those who do have a doctor had 1.9 times higher odds of having a dental visit in the past year.

Figure 4: Adjusted Odds Ratios and 95 percent Confidence Intervals for the association of select risk factors and having a dental visit in the past year, Adults ≥ 18 years old, Texas BRFSS 2016



Error bars represent 95% confidence intervals for each odds ratio. Adjusted for gender, race/ethnicity, age, education, and marital status.

Edentulism among Adults by Select Demographics

Edentulism is defined as the absence or complete loss of all-natural dentition or teeth. Figure 5 presents results for select demographics and edentulous adults, ≥ 65 years of age, in Texas for 2016. Survey participants were asked 'How many of your permanent teeth have been removed because of tooth

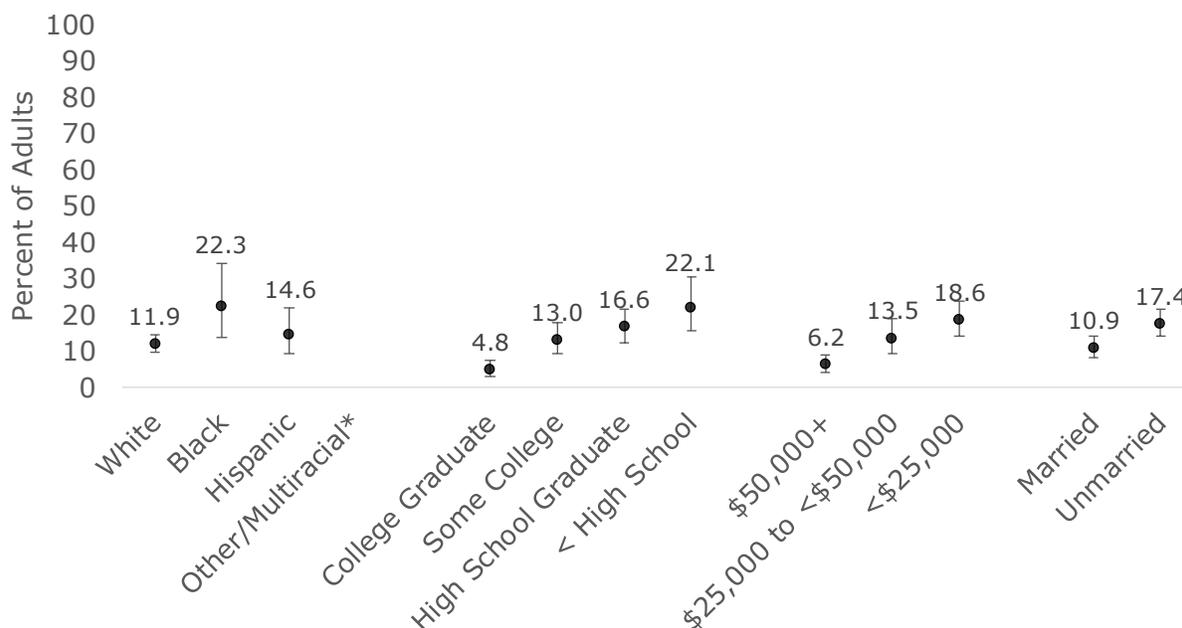


decay or gum disease?'. They were told to include teeth lost to infection, but not teeth lost for other reasons, such as injury or orthodontics.

Overall, 13.8 percent of Texas adults reported they were edentulous because of tooth decay or gum disease. Those participants, ≥ 65 years of age, who identified themselves as Black Non-Hispanic or Hispanic were more likely to report edentulism due to tooth decay or gum disease than White Non-Hispanic, although these differences were not significant. Participants who reported being unmarried were significantly more likely to report edentulism compared to those who reported being married. Those participants with a lower socioeconomic status, defined by a lower education or a lower annual household income, were more likely to more likely to report edentulism compared to their counterparts. Although not statistically significant, females were more likely to be edentulous due to tooth decay or gum disease compared to males in this age group (15.5 percent vs. 11.8 percent, $p=0.12$). Additionally, participants who reported being unemployed were significantly more likely to report edentulism compared to those who reported being employed (14.9 percent vs. 7.1 percent, $p\leq 0.01$).



Figure 5: Percent of Edentulous Adults, Age ≥65 by Select Demographics, Texas BRFSS 2016



Error bars represent 95% confidence intervals for each prevalence estimate.

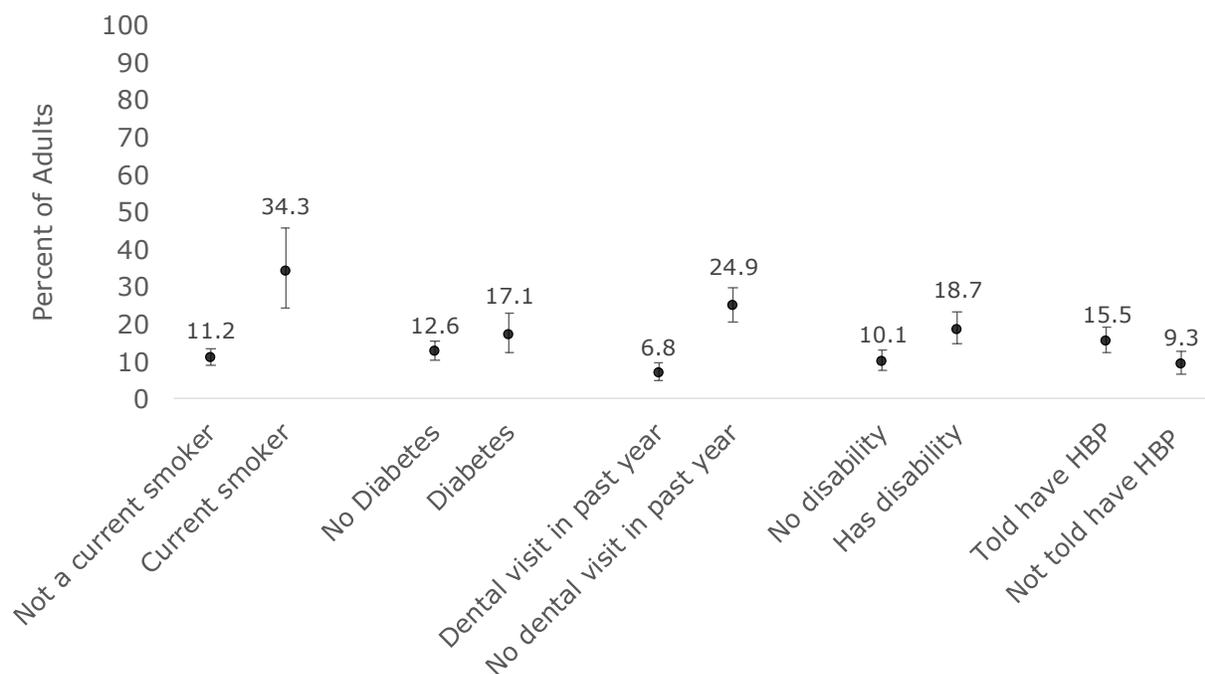
*Relative Standard Error greater than 30.0%, estimate not displayed

Edentulism among Adults by Select Risk Factors

Figure 6 presents the association between several select risk factors and edentulism for adults, ≥65 years of age, in Texas for 2016. As shown, adults who were current smokers were significantly more likely to be edentulous compared to non-smoking adults ($p \leq 0.001$). Compared to adults who had a dental visit in the past year, those without a dental visit in the past year were significantly more likely to be edentulous ($p \leq 0.0001$). Adults in this age group who had a disability were significantly more likely to be edentulous compared to non-disabled adults ($p \leq 0.001$).



Figure 6: Percent of Edentulous Adults, Age ≥ 65 , by Select Risk Factors, Texas BRFSS 2016



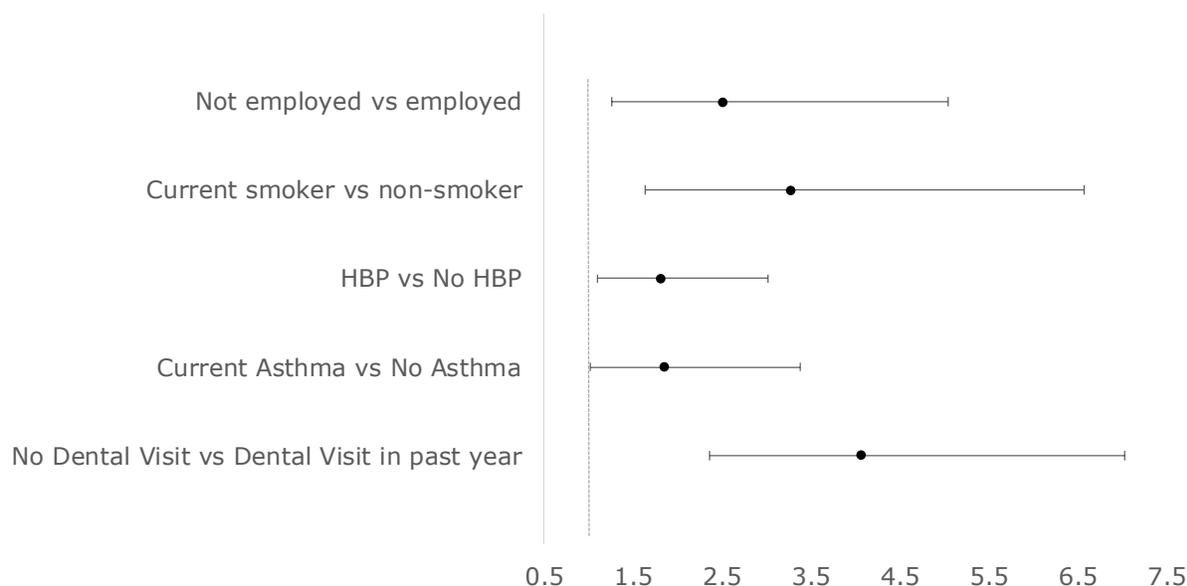
Error bars represent 95% confidence intervals for each prevalence estimate.

Association between Edentulism and Select Risk Factors, Adults Age ≥ 65

Figure 7 presents the association between several select risk factors and edentulism for Texas adults, 65 years or older. Adjusting for gender, race/ethnicity, age, education, and marital status, adults ≥ 65 who were current smokers had 3.3 times higher odds of being edentulous compared to non-smokers ($p \leq 0.001$). Compared to adults with no high blood pressure, those with high blood pressure had 1.8 times higher odds of being edentulous. Respondents who did not have asthma had 1.9 times higher odds of being edentulous compared to adults with current asthma. Non-employed adults had 2.5 times higher odds of being edentulous compared to their employed counterparts.



Figure 7: Adjusted Odds Ratios and 95percent Confidence Intervals for the association of edentulism and select risk factors, Adults ≥ 65 years old, Texas BRFSS 2016



Error bars represent 95% confidence intervals for each odds ratio. Adjusted for gender, race/ethnicity, education, and marital status.

Dental Tourism

Lack of access to affordable and timely local care plays a significant role in prompting patients to cross borders and receive dental care outside their local communities.¹¹ This phenomenon of cross-border care is commonly regarded as 'dental tourism'.¹⁰ In 2016, 2.5 percent of Texas adults, age ≥ 18 , indicated they traveled outside the U.S. to receive pre-planned medical, dental or surgical procedures or treatments. Of these, almost 83 percent of adults traveled outside the U.S. for procedures and treatments explicitly related to dental surgery and/or routine dental care. Due to the small number of respondents, and information about adults receiving dental surgery and/or routine dental care, the data may not be reliable. However, the data suggest the top three reasons given for why these adults traveled outside the U.S. for dental surgery and/or routine dental care include: procedure or treatment too expensive in U.S., procedure or treatment not covered by health insurance and feeling more familiar or comfortable in another country/home country with procedure or treatment. Finally, nearly 86.0 percent of adult Texans who



traveled outside the U.S. for dental surgery and/or routine dental care, reported traveling to Mexico for their procedure or treatment.

What's Next

Many adults in Texas are not receiving the dental care they need. Chronic diseases and poor overall health often coincide with poor oral health. The medical and dental communities must work together to provide oral health education to adults. Referrals should be made for preventive dental care before issues arise. Smoking cessation can also significantly reduce the oral health burden of adults in Texas. The oral health of adults is often overlooked due to a lack of resources and funding. Policies and programs should be developed to increase access to and use of dental care for adults. Methods should also be explored to increase dental insurance coverage for adults.

References

1. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
2. Griffin SO, Jones JA, Brunson D, Griffin PM, Bailey WD. Burden of Oral Disease Among Older Adults and Implications for Public Health Priorities. *Am J Public Health*. 2012; 102:411–418.doi:10.2105/AJPH.2011.300362.
3. Dye BA, Tan S, Smith V. Trends in oral health status: United States, 1988–1994 and 1999–2004. *Vital Health Stat* 11. 2007;11(248):1–92.
4. Eke PI, Dye BA, Wei L, Thornton-Evans GO, Genco RJ. Prevalence of Periodontitis in Adults in the United States: 2009 and 2010. *Journal of Dental Research*. 2012, 91 (10): 914-920. <https://doi.org/10.1177/0022034512457373>
5. Wall, TP, Vujicic M, Nasseh K. Recent Trends in the Utilization of Dental Care in the United States. *Journal of Dental Education*. 2012, 76 (8): 1020-1027.
6. Huang DL, Chan KCG, Young BA. Poor Oral Health and Quality of Life in Older U.S. Adults with Diabetes Mellitus. *Journal of the American Geriatrics Society*. 2013, 61 (10): 1782-2788.
7. Paganini-Hill A, White SC, Atchison KA. Dental Health Behaviors, Dentition, and Mortality in Elderly: The Leisure World Cohort Study. *Journal of Aging Research*. 2011; pp.1-10.



TEXAS
Health and Human
Services

Texas Department of State
Health Services

8. Centers for Disease Control and Prevention (CDC). *Behavior Risk Factor Surveillance System* [Fact sheet]. Retrieved at <https://www.cdc.gov/brfss/factsheets/pdf/brfss-history.pdf>
9. <https://www.utexas.edu/law/centers/humanrights/borderwall/communities/mexico-La-Paz-Environmental-Agreement.pdf>. Retrieved 05/06/2019.
10. Counties in the border/non-border subgroup were designated as Border or Non-Border according to Article 4 of the La Paz Agreement of 1983. <https://www.utexas.edu/law/centers/humanrights/borderwall/communities/mexico-La-Paz-Environmental-Agreement.pdf>.
11. Turner L. Cross-border dental care: 'dental tourism' and patient mobility. *British Dental Journal*. 2008; 204 (10) pp. 253-254.