TEXAS Health and Human Services | Texas Department of State Health Services

TMF Health Quality Institute

Smile Proud

Improving Oral Health Among Texas Nursing Home Residents, 2016-2017

Background

According to the Centers for Disease Control and Prevention (CDC), there are an estimated 1.4 million older adults, age 65 or older, living in nursing homes at any given time in the U.S.[1] Every day 10,000 adults reach the age of 65 and most of them will not have access to dental care.[2]

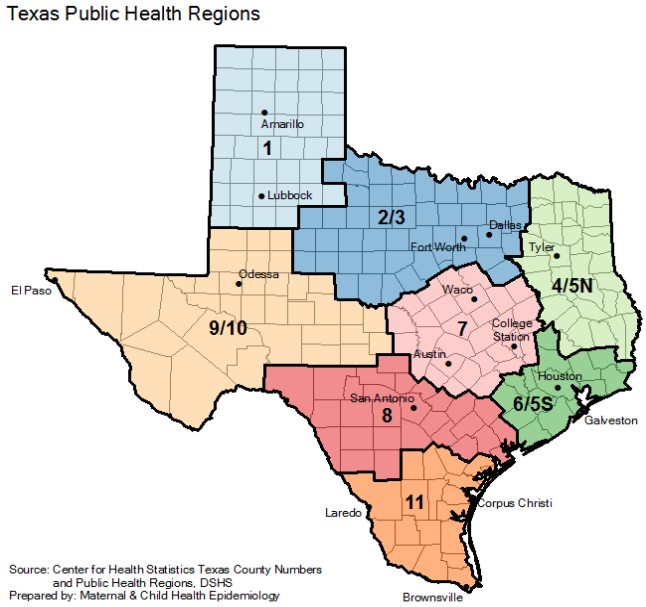
Poor oral hygiene can lead to or exacerbate diseases, such as respiratory infections, atherosclerotic disease, pulmonary disease, diabetes, osteoporosis, and other systemic diseases.[3] Approximately 1 in 10 cases of death from pneumonia in nursing home residents may be prevented by improving oral hygiene.[4] Lack of daily oral hygiene can result in pain. About two-thirds of nursing home residents have dementia which inhibits their ability to communicate and decreases their ability to perform activities of daily living.[5,6]

This report includes a subset of the Smile Proud pilot data collected by the TMF Health Quality Institute and analyzed by the Department of State Health Services, Maternal and Child Health Epidemiology Unit. Data for this report was collected using the Association of State and Territorial Dental Directors (ASTDD) Adult Basic Screening Survey (BSS) methodology.[7] The intent of this report is to provide an analysis of select demographics and oral health outcomes in a sample of elderly adults who reside in nursing homes in four major cities in Texas. Data collection for the survey began in March 2017 and ended on March 31, 2019. Results in this report are generalizable to the select group of interest in the Smile Proud pilot and include nursing home residents, age 65 or older, in four Texas cities and rural areas around those cities.

Methods

In 2017, TMF Health Quality Institute was awarded Civil Money Penalty funding through the Centers for Medicaid and Medicare Services for a project to improve daily oral hygiene while impacting oral health-related conditions among Texas nursing home residents. One hundred twenty nursing homes in four major Texas cities (Austin, Dallas, Houston, and San Antonio) and

surrounding rural areas were recruited for the project. These cities are in different counties and public health regions (PHR) across Texas.



The map to the left is provided to identify PHR in Texas. As shown, each of the 254 Texas counties are assigned to one of eight public health regions. The cities in this study were in five PHR including PHR 2/3, PHR 4/5N, PHR 6/5S, PHR 7, and finally, PHR 8. 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. [8]

As part of the funding provided, TMF Health Quality Institute performed a baseline oral health assessment to evaluate oral health practices on the elderly in the selected nursing homes, following BSS protocol. Samples were selected from each nursing home by the nursing home leadership and included elderly adults, 65 and older, who were able to provide their own consent. Consent, at each site, was verified by a dental hygienist prior to screening. A total of 100% of the nursing homes recruited were retained throughout the pilot project. ASTDD Adult BSS guidelines and materials were used to standardize screeners.

Results

General Demographics

Table 1 reflects select general demographics for 1,200 residents in 126 nursing homes in 24 counties across Texas who consented to participate in the Smile Proud pilot project. There was an average of approximately 10 residents seen at each nursing home. Counties included in the study were distributed geographically across 5 total PHR in Texas, with approximately one-quarter of residents in nursing homes in each of the following PHRs: 2/3, 6/5S, 7, and 8, and less than 1% in PHR 4/5N. Nearly 98% of residents in nursing homes who consented to participate in this study were in Texas counties defined as a metropolitan areas.[9] Additionally, 100% of participants were in nursing homes located in non-border counties.[10] As

shown, the majority of residents were ≥65 years of age (99.8%), female (61.7%), and of White or Other (62.5%) race ethnicity.

Table 1: General Demographics, Adult BSS 2017-2019

Demographic	Sample size[a]	Percent
Age		
<65	2	0.2
>=65	1214	99.8
Gender		
Male	467	38.3
Female	753	61.7
Race/Ethnicity		
White/Other[b]	749	62.5
Black	202	16.9
Hispanic	248	20.7
Metropolitan Statistical Area (MSA)[c]		
Metro	1190	97.5
Non-Metro	30	2.5
Public Health Regions (PHR)[d]		
2/3	281	23.0
4/5N	10	0.8
6/5S	310	25.4
7	306	25.1
8	313	25.7
Border Regions (La Paz)[e]		
Non-Border	1220	100.0

All data are unweighted [a] Missing data not included. [b] Other includes American Indian, Alaskan Native, Asian, and multi-racial (1.4%, n=17). [c] Metropolitan Statistical Area (MSA) defined by the U.S. Office of Budget and Management (OMB) bulletin no. 18-04, dated September 14, 2018. [d] Public Health Regions (PHR) accessed https://www.dshs.texas.gov/regions/ on 03/27/2019. [e] Border Region defined as Border or Non-Border according to Article 4 of the La Paz Agreement of 1983.

Dental Access

Table 2 presents the residents-reported prevalence of access to dental care. As shown, just over a quarter of residents in Texas nursing homes (26.4%) indicated they visited a dentist within the past year; whereas 30.5% of elderly residents did not know how long it had been since their last dental visit. The prevalence of access to dental care did not differ by gender (data not shown).

Table 2: Dental Access, Adult BSS 2017-2019

Dental Access	Sample size	Percent
Last Dental Visit		
Within 1 year	322	26.4
1-2 years	146	12.0
2+ years	375	30.7
Unknown	372	30.5
Never	--	--

All data are unweighted

-- Sample size <10, estimates not displayed

Dentures

Table 3 reflects results for questions about the use of both removable upper and lower dentures and whether a participant usually wears their dentures when eating. As shown, 30.7% of residents had a removable upper denture, while only 22.6% had a removable lower denture. For residents reporting a removable upper denture, 81.0% usually wore the upper denture when eating. Although data are not shown, there was a significant association between the use of removable dentures and gender ($p \leq 0.05$) using the chi-square test for proportions; however, no association was seen between removable dentures and race ethnicity or last dental visit.

Table 3. Dentures, Adult BSS 2017-2019

Denture Wear	Sample size	Percent
Removable Upper Dentures		
No	846	69.3
Yes	374	30.7
Wearing Upper Dentures while Eating		
No	71	19.0
Yes	303	81.0
Removable Lower Dentures		
No	944	77.4
Yes	276	22.6
Wearing Lower Dentures while Eating		
No	73	26.5
Yes	203	73.5

All data are unweighted

Natural Teeth

Table 4 presents the median number of upper and lower natural teeth reported during the oral health screening portion of the site visit. On average, a normal adult mouth has 32 teeth, including four wisdom teeth. When counting the number of natural teeth, the BSS criteria includes third molars, retained primary teeth, and root fragments. In this study, nursing home residents in Texas had a median number of nine upper and nine lower natural teeth. There was no association between the number of natural teeth by gender using t-test for means ($p \leq 0.05$). Likewise, using an analysis of variance at an alpha level ≤ 0.05, there was no association between the number of natural teeth and race/ethnicity or last dental visit.

Table 4. Number of Upper and Lower Natural Teeth, Adult BSS 2017-2019

	Sample size	Mean	Median	LCL for Mean	UCL for Mean
Upper Natural Teeth	1220	7	9	7	8
Lower Natural Teeth	1220	8	9	8	8

All data are unweighted
LCL = Lower Confidence Limit; UCL = Upper Confidence Limit

Dental Outcomes

Table 5 presents several oral health outcomes for Texas nursing home residents who participated in the Smile Proud pilot from 2017 to 2019. Overall, 19.5% of residents were edentulous, or lacking teeth. Additionally, excluding edentulous residents, 38.1% of residents in Texas nursing homes had untreated decay or dental caries in their remaining natural teeth. Dental caries is a disease caused by acids produced by bacteria in the mouth. For the purposes of the BSS model, teeth are only considered decayed at the point in the caries process when enough enamel has been lost from the surface to create a definitive break in the enamel or, more simply stated, a hole. Furthermore, excluding edentulous residents, 36.6% of elderly residents had root fragments. Usually, when a tooth is removed by a dentist, the roots are taken out with it. However, if the tooth is lost through accident or decay, the root or roots may be retained within the jawbone and gums, causing problems such as mouth infections and pain. These are known as root fragments.

In this study, 4.1% of Texas nursing home residents had soft tissue lesions. Soft tissue lesions in the mouth can present as ulcerations, red-white lesions, pigmentations, and lesions that tend to grow outward, known as exophytic lesions. Clinical classification of oral lesions is of great importance in the diagnostic process.[10] Coding a resident as needing periodontal care indicates they have a need to have their teeth cleaned before their next regularly scheduled dental appointment or they have a definite need for periodontal intervention within the next few months because of substantial problems. Nearly 17.7% of non-edentulous residents in this study needed periodontal care.

Residents were screened for their need for dental care. This indicator is used to estimate how soon a client should visit the dentist for any necessary treatment. A client may have no treatment need, meaning no obvious dental problems; early treatment need, meaning there is a need for them to see a dentist for dental care within the next several weeks, or urgent treatment need, meaning the client has a need to see a dentist within the next week due to pain or infection. In this study, nearly 30% of residents had an early treatment need; while 7.8% had an urgent treatment need.

Table 5: Dental Outcomes, Adult BSS 2017-2019

Dental Outcomes	Sample size	Percent
Untreated Tooth Decay [a]		
No	608	61.9
Yes	374	38.1
Root Fragments [a]		
No	623	63.4
Yes	359	36.6
Soft Tissue Lesion		
No	1170	95.9
Yes	50	4.1
Need for Periodontal Care [a]		
No	808	82.3
Yes	174	17.7
Treatment Need		
None	761	62.4
Early	364	29.8
Urgent	95	7.8

All data are unweighted

[a] Untreated tooth decay, root fragments, and periodontal care exclude edentulous residents

Table 6 presents several oral health outcomes for Texas nursing home residents who participated in the Smile Proud pilot from 2017 to 2019 by gender. In this study, 17.1% of males and 21.0% of females were edentulous. Additionally, using chi-square test for proportions, male residents were significantly more likely to have untreated tooth decay, root fragments, a need for periodontal care, and early and urgent treatment needs compared to female residents ($p \leq 0.05$).

Table 6: Dental Outcomes by Gender, Adult BSS 2017-2019

	Male		Female	
Dental Outcomes	Sample size	Percent	Sample size	Percent
Untreated Tooth Decay [a]				
No	205	53.0	403	67.7
Yes	182	47.0	192	32.3
Root Fragments [a]				
No	222	57.4	401	67.4
Yes	165	42.6	194	32.6
Soft Tissue Lesion				
No	446	95.5	724	96.2
Yes	21	4.5	29	3.9
Need for Periodontal Care [a]				
No	296	76.5	512	86.1
Yes	91	23.5	83	14.0
Treatment Need				
None	243	52.0	518	68.8
Early	179	38.3	185	24.6
Urgent	45	9.6	50	6.6

All data are unweighted

[a] Untreated tooth decay, root fragments, and periodontal care exclude edentulous residents

Table 7 presents several oral health outcomes for Texas nursing home residents who participated in the Smile Proud pilot from 2017 to 2019 by MSA designation. Although most residents lived in counties designated as metro, there were some differences in dental outcomes across the metro and non-metro subgroups. Using Fisher's Exact test for categorical variables, metro residents were more likely to have early and urgent treatment needs compared to non-metro residents ($p \leq 0.05$). Furthermore, metro residents were less likely to have untreated tooth decay than non-metro residents (37.7% versus 51.9%, respectively).

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Table 7: Dental Outcomes by MSA[a] Designation, Adult BSS 2017-2019

Dental Outcomes	Metro		Non-Metro	
	Sample size	Percent	Sample size	Percent
Untreated Tooth Decay [b]				
No	595	62.3	13	48.2
Yes	360	37.7	14	51.9
Root Fragments [b]				
No	607	63.6	16	59.3
Yes	348	36.4	11	40.7
Soft Tissue Lesion				
No	1143	96.1	27	90.0
Yes	47	3.9	--	--
Need for Periodontal Care [b]				
No	783	82.0	25	92.6
Yes	172	18.0	--	--
Treatment Need				
None	748	62.9	13	43.3
Early	352	29.6	12	40.0
Urgent	90	7.6	--	--

All data are unweighted

Sample size <10, estimates not displayed. [a] Metropolitan Statistical Area (MSA) defined by the U.S. Office of Budget and Management (OMB) bulletin no. 18-04, dated September 14, 2018.

[b] Untreated tooth decay, root fragments, and periodontal care exclude edentulous residents

What Next:

These findings illustrate that oral health for the elderly is often overlooked and that further research is warranted. Nursing homes need to ensure that care staff are knowledgeable in oral health and how to brush and floss someone else's teeth and how to care for full and partial dentures. Residents also need to be educated on the importance of dental care and the consequences of deferring treatment due to cost or other reasons. Residents in nursing homes need access to routine dental care but mobility, health and cost are common barriers. Mobile dental clinics are a possible solution but, finding reimbursement for care of the elderly is difficult because Texas does not have an adult Medicaid benefit and dental care is not included in Medicare.

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References

1. U.S. Dept. of Health and Human Services, Centers for Disease Control and Prevention: Long-Term Care Providers and Services Users in the United States: Data from the National Study of Long-Term Care Providers, 2013–2014
2. Elisa M. Ghezzi, DDS, PhD Consultant, Michigan Geriatric Dentistry Network
3. Kane SF. The effects of oral health on systemic health. General Dentistry. 2017 (411):30-34.
4. Sjogren P, Nilsson E, Forsell M, Johansson O, Hoogstraate J. A systematic review of the preventive effect of oral hygiene on pneumonia and respiratory tract infection in elderly people in hospitals and nursing homes: effect estimates and methodological quality of randomized controlled trials. J Am Geriatric Soc. 2008 (56):2124-2130.
5. Gaugler JE, Yu F, Davila HW, Shippee T. Alzheimer's Disease and Nursing Homes. Health Aff (Millwood). 2014; 33(4): 650–657.
6. Scott KR, Barrett AM. Dementia syndromes: evaluation and treatment. Expert Rev Neurother. 2007; 7(4): 407–422.
7. Association of State and Territorial Dental Directors. (2017). Basic screening surveys: an approach to monitoring community oral health. http://www.astdd.org/basic-screening-survey-tool/
8. Goodridge D, Marciniuk D. Rural and remote care: Overcoming the challenges of distance. Chronic Respiratory Disease. 2016. 13(2): 192-293.
9. Counties in the urban/rural subgroup were designated in 2018 (OMB Bulletin No. 18-04 dated September 14, 2018) as Metropolitan or Non-Metropolitan, respectively, by the U.S. Office of Budget and Management. https://www.census.gov/programs-surveys/metro-micro/about/omb-standards.html.
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.