

THE ORAL HEALTH STATUS OF NEBRASKA'S LONG-TERM CARE FACILITY RESIDENTS

QUICK FACTS

- 28% of LTCF residents have no natural teeth. Of those without teeth, 20% are missing an upper and/or lower denture.
- 56% of LTCF residents have fewer than 20 teeth. Having fewer than 20 teeth has a negative impact on a person's ability to eat.
- Of those with teeth, 47% have untreated tooth decay and 9% need urgent dental care because of current pain or infection. About one-third (31%) of the residents with teeth need periodontal care.
- 68% of the LTCF residents were female while 32% were male.

ORAL HEALTH DISPARITIES

- Adults living in nursing facilities have poorer oral health than assisted living residents.
- Adults living in rural facilities have more untreated disease and are more likely to need care than adults living in urban facilities.

RECOMMENDATIONS

- Expand programs that provide educational and preventive dental services at LTC facilities, especially in rural counties.
- Develop programs that provide corrective and emergency dental services at LTC facilities, especially in rural counties.
- Provide enhanced training to LTC staff about the importance of daily oral hygiene services.
- Create a referral system between LTC facilities and local health departments for residents with urgent dental needs.
- Consider the use of silver diamine fluoride treatment by Registered Dental Hygienist with a Public Health Authorization for patients with transportation barriers.

Oral diseases such as dental caries (tooth decay), periodontitis (gum disease), tooth loss, and oral cancer are major health problems for older adults. Long-term care facility (LTCF) residents are especially vulnerable to these diseases because physical and/or cognitive impairments often hinder their ability to maintain their own oral hygiene and facility staff may not have the competency or time required to provide such care.

Poor oral health can have a negative effect on general health. For example, severe periodontitis can adversely affect glycemic control in adults with diabetes and there is a direct relationship between periodontitis severity and diabetes complications.¹ Advanced dental caries can cause pain and infection, and can result in problems with eating, chewing, smiling, and communication. A mouth that is not cleaned regularly increases an individual's oral bacterial load which may lead to aspiration pneumonia.² Furthermore, adults with severe tooth loss may experience nutritional problems because they are less likely to meet current dietary recommendations.³ Maintaining an adequate nutritional status is important because inadequate nutrition can lead to either underweight, which increases the risk of infections and mortality, or possible overweight, which increases the risk of chronic diseases such as hypertension and diabetes.

Although LTCF residents are at risk of oral disease, they often have difficulty obtaining routine dental care. Many do not have dental insurance because they lost their benefits upon retirement and the federal Medicare program does not cover routine dental care. Nebraska's Medicaid program only provides limited dental benefits for adults with a per-person annual expenditure of \$750. Even those with dental insurance, or the means to pay for dental care, may have limited access because of transportation issues or the inability to find a dentist that accepts Medicaid or who can provide care to medically-compromised individuals.

To assess the oral health of Nebraska's LTCF residents, the Nebraska Department of Health and Human Services (DHHS) Office of Oral Health and Dentistry (OOHD) completed the first random stratified state-wide oral health survey of individuals living in licensed assisted living and long term-care facilities. During 2019, a total of 544 adults in 30 urban and rural facilities received an oral health screening. This data brief presents the results of that survey. As of July 2020, DHHS reports 210 Long-Term Care Facilities with 15,734 beds; and 286 Assisted Living Facilities with 13,290 beds in the state of Nebraska.

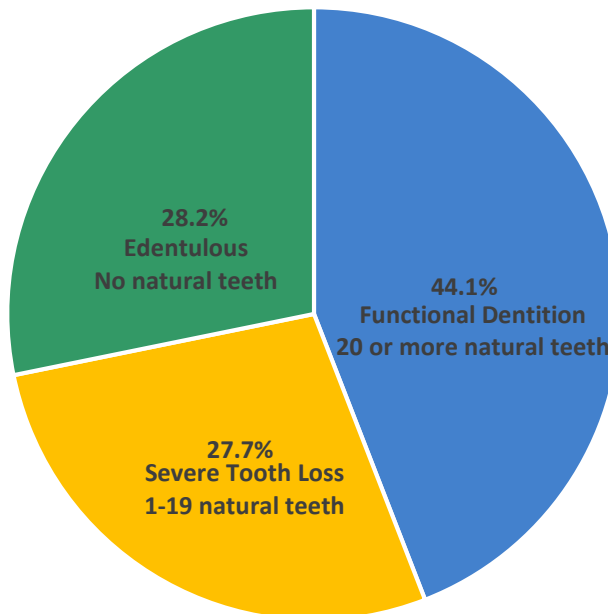
Prevalence of tooth loss

Adults are supposed to have 32 permanent teeth; however, many people in the United States have their four 3rd molars (wisdom teeth) extracted, leaving the average American adult with a complement of 28 teeth. Tooth loss, which generally occurs because of long standing dental disease, can have a significant negative impact on the general health and well-being of older adults. Tooth loss can impede one's ability to chew effectively, resulting in a deficient diet, weight loss, and a myriad of related ill effects to a person's overall health. Tooth loss combined with poor muscle tone/masticatory function can also increase a senior's susceptibility to choking on food.

Since the middle of the 20th century, the prevalence of edentulism (total tooth loss) has steadily declined and today about 17% of U.S. adults 65 or older have no natural teeth. In Nebraska, 28% of long-term care facility residents are edentulous with a higher prevalence in nursing compared to assisted living facilities (33% vs. 20%). Of those with no teeth, 20% did not have a full set of dentures which substantially limits their ability to chew a wide range of foods.

The World Health Organization considers 20 teeth to be the minimum number for a functioning dentition, therefore, adults with fewer than 20 natural teeth are considered to have severe tooth loss.⁴ Overall, more than half of those screened (56%) had severe tooth loss with a higher prevalence among nursing facility residents compared to those living in assisted living facilities (61% vs. 48%).

Figure 1: Percentage of Nebraska's LTCF residents with more than 20, 1-20 or no natural teeth, 2019



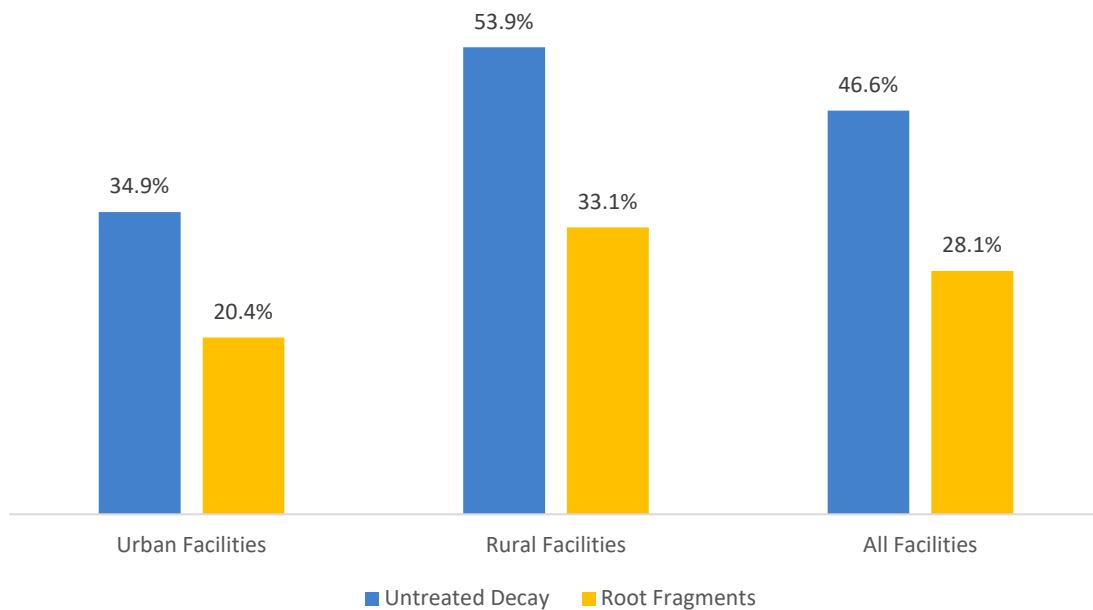
Prevalence of untreated tooth decay

Dental caries (tooth decay) is a multi-factorial disease process initiated by bacteria that metabolize sugars to form acids. These acids demineralize the tooth surface and eventually form a cavity. Tooth decay is preventable by a combination of community, professional, and individual measures including water fluoridation, dental sealants, topical fluoride applications, use of fluoride toothpastes at home, good oral hygiene, and healthy diet. If left untreated, tooth decay can cause pain, infection, swelling and ultimately, tooth loss.

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Of Nebraska's LTCF residents with teeth, almost half (47%) have untreated tooth decay. The prevalence of untreated decay is higher in rural facilities where 54% of the residents have untreated decay compared to 35% of residents in urban facilities. A related finding is the presence of root fragments. Root fragments are the result of complete destruction of the crown of the tooth from decay resulting in only the tooth's root remaining in the mouth. Root fragments can pose a high risk for infection. The overall prevalence of root fragments was 28% among LTCF residents with teeth (33% in rural facilities and 20% in urban facilities).

Figure 2: Percentage of Nebraska's LTCF residents with untreated decay and root fragments by facility location (limited to residents with at least one natural tooth), 2019



Need for periodontal care

Periodontitis (gum disease) is an inflammatory disease that affects the soft and hard tissues that support the teeth. As the disease progresses, the supporting tissues are destroyed, bone can be lost, and the teeth may loosen or eventually fall out. Severe periodontitis can adversely affect glycemic control in adults with diabetes and there is a direct relationship between periodontal disease severity and diabetes complications.¹ The best ways to prevent periodontal disease are to avoid smoking, maintain control of diabetes, have regular dental cleanings, and practice good oral hygiene.

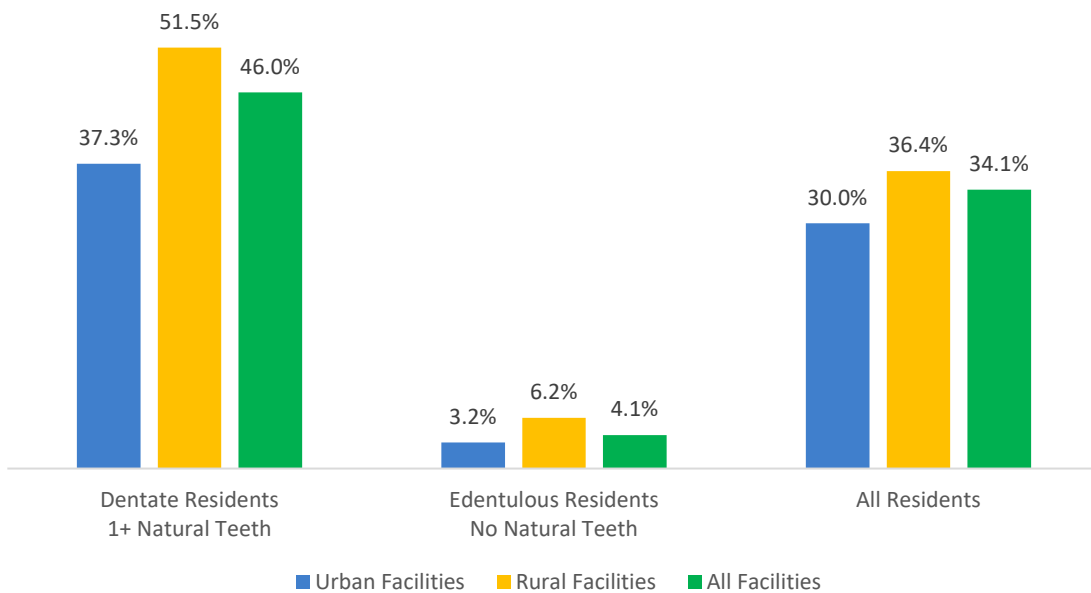
Of the dentate residents screened, almost one-in-three (31%) need a periodontal care service such as having a deep tooth cleaning and root scaling. Most periodontal care services can be provided by a dental hygienist. The percentage needing a periodontal care service is substantially higher in rural compared to urban facilities (40% vs. 15%).

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Need for restorative dental care

While dental hygienists can provide most periodontal care services, restorative dental care must be provided by a dentist. Restorative services include fillings, crowns, extractions, root canals, biopsies for suspicious oral lesions, dentures, and denture repairs. Dentate individuals (those with teeth) are substantially more likely to need restorative dental care than edentulous individuals (no teeth). Overall, 34% of Nebraska's LTCF residents need restorative dental care. Among dentate residents, 46% need dental care compared to 4% of those that are edentulous.

Figure 3: Percentage of Nebraska's LTCF residents needing restorative dental care by dentate status and facility location, 2019



Recommendations

- Expand programs that provide educational and preventive dental services at LTC facilities, especially in rural counties.
- Develop programs that provide corrective and emergency dental services at LTC facilities, especially in rural counties.
- Provide enhanced training to LTC staff about the importance of daily oral hygiene services.
- Create a referral system between LTC facilities and local public health departments for residents with urgent dental needs.
- Consider the use of silver diamine fluoride treatment by Registered Dental Hygienist with a Public Health Authorization for patients with transportation or other access to care barriers.

Data source and methods

This data brief is based on data from the Nebraska Oral Health Survey of Long-Term Care Facilities which was conducted during 2019. The survey screened residents of two facility types – assisted living facilities (ALF) and nursing facilities (NF). The sampling frame for the survey consisted of all ALFs and NFs with 20 or more licensed beds. The sampling frame was stratified by facility type then ordered by urban/rural status of the county based on the Office of Management and Budget designation.⁵ The following counties were classified as urban: Cass,

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Dakota, Dixon, Douglas, Lancaster, Sarpy, Saunders, Seward, and Washington. A systematic probability proportional to size sampling scheme was used to select 20 ALFs and 20 NFs. If a facility refused to participate, efforts were made to screen a replacement site selected from the same sampling interval.

Of the 20 ALFs selected (8 rural and 12 urban), 13 were screened (7 rural and 6 urban). A total of 206 ALF residents were screened, representing 22.5% of the 906 licensed ALF beds at the 13 participating facilities. Of the 20 NFs selected (12 rural and 8 urban), 17 were screened (11 rural and 6 urban). A total of 338 NF residents were screened, representing 24.6% of the 1,374 licensed NF beds at the 17 participating facilities.

Calibrated Nebraska dentists and public health hygienists completed the screenings at the participating long-term care facilities. The following information was collected for each individual: age, sex, race/ethnicity, presence and use of removable dentures, number of teeth present, the presence of untreated decay, root fragments and soft tissue lesions, the need for periodontal care, and the urgency of need for restorative dental treatment. The OOH used the Association of State and Territorial Dental Director's (ASTDD) *Basic Screening Survey* clinical indicator definitions and data collection protocols.⁶

All statistical analyses were performed by an ASTDD national epidemiologist using the complex survey procedures within SAS (Version 9.4; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on selection probabilities.

Limitations

This was a survey of long-term care facility residents and is not generalizable to the general population of older adults. Only those residents that provided consent were screened and participating residents may not be representative of all residents. Results from this survey cannot be compared to national data because national oral health surveys do not collect information from institutionalized adults.

Definitions

Assisted-living facility: A facility that provides shelter, food and non-nursing care to residents because of age, illness or physical disability.

Dentate: The individual has at least one natural tooth.

Edentulous: The individual has no natural teeth.

Nursing facility: A facility where nursing care or related services are provided to residents of the facility.

Periodontal disease: An inflammatory disease that affects the soft and hard structures that support the teeth.

Severe tooth loss: Refers to individuals with fewer than 20 teeth, including those with no natural teeth.

Untreated decay: Describes dental cavities or tooth decay that have not received appropriate treatment.

Executive Summary

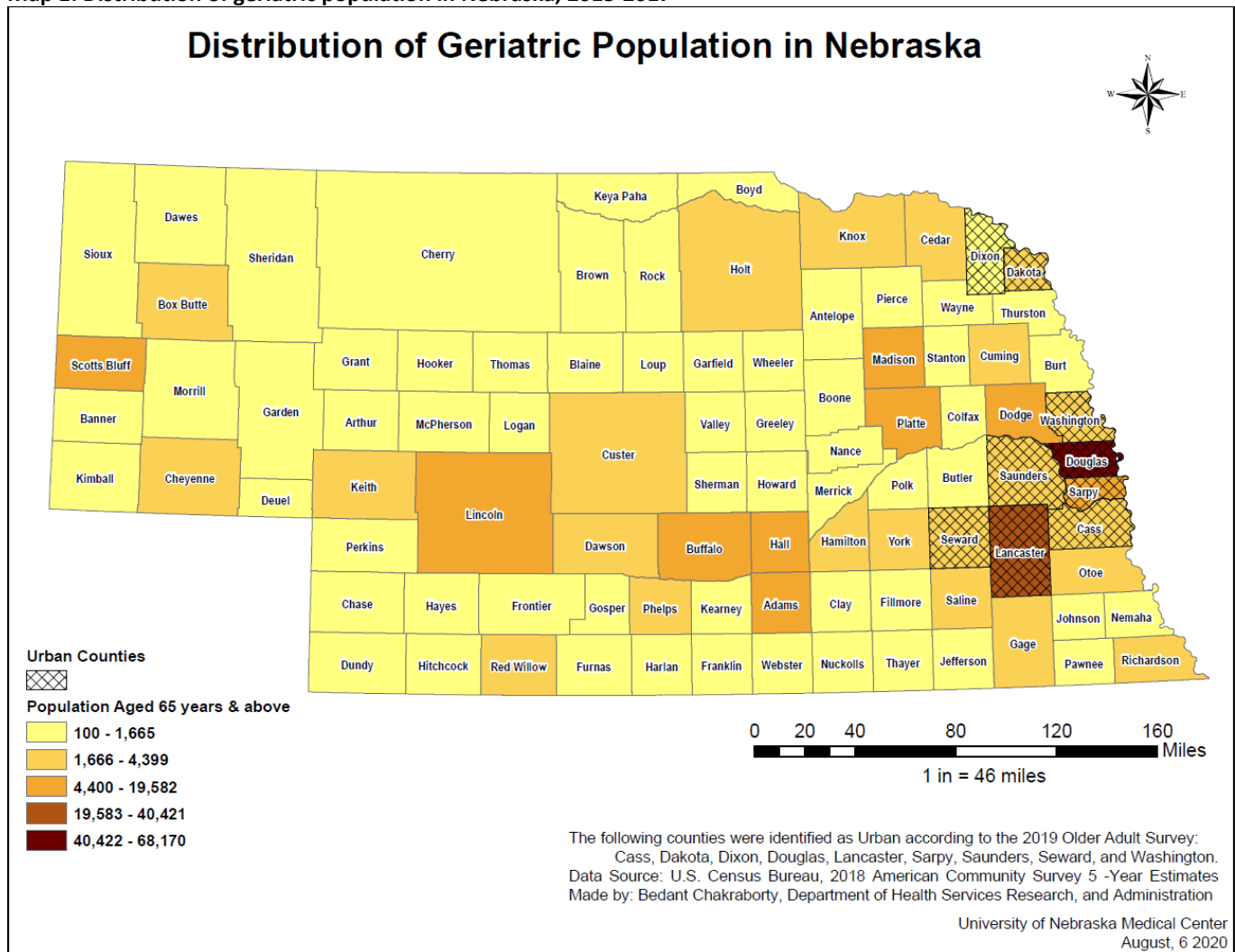
Nebraska now becomes the 24th state to supply basic screening survey data on older adults to the ASTDD. This information will be helpful as the DHHS Office of Oral Health aligns future activities towards the Healthy People 2030 objectives that include reduction of older adult untreated root surface decay, reduction of total tooth loss, and the reduction of moderate and severe periodontal disease. The U.S. population is aging and more people are maintaining their natural teeth into their later years which increases the need for dental care. Efforts to expand access to local providers and dental services is important for older adults, especially in rural areas of Nebraska.

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References.

1. Llambés F, Arias-Herrera S, Caffesse R. Relationship between diabetes and periodontal infection. *World J Diabetes.* 2015; 6: 927-35.
2. Müller F. Oral hygiene reduces the mortality from aspiration pneumonia in frail elders. *J Dent Res* 2015; 94(3 Suppl): 145–165.
3. Ervin RB, Dye BA. The effect of functional dentition on Healthy Eating Index scores and nutrient intakes in a nationally representative sample of older adults. *J Public Health Dent.* 2009; 69(4): 207–216.
4. Recent Advances in Oral Health. Geneva, Switzerland: World Health Organization; 1992: 16–17 WHO Technical Report Series No. 826.
5. United State Department of Agriculture. Nebraska: Three rural definitions based on census places. Retrieved from https://www.ers.usda.gov/webdocs/DataFiles/53180/25582_NE.pdf?v=0
6. Association of State and Territorial Dental Directors. 2015. Basic screening surveys: an approach to monitoring community oral health. Retrieved from <http://www.astdd.org/basic-screening-survey-tool/>

Map 1: Distribution of geriatric population in Nebraska, 2013-2017



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Data Tables.

Table 1: Characteristics of the participating long-term care facility residents by facility type, 2019

Characteristic	Assisted Living Facilities (n=206)		Nursing Facilities (n=338)		All Participants (n=544)	
	# Screened	Weighted Percent/Mean	# Screened	Weighted Percent/Mean	# Screened	Weighted Percent/Mean
Age						
LT 65 years	13	9.7	27	8.5	40	8.9
65-74 years	21	9.6	66	23.8	87	18.8
75-84 years	60	28.5	91	28.5	151	28.5
85-94 years	92	43.8	127	32.7	219	36.6
95+ years	20	8.4	26	6.2	46	7.0
Unknown/Missing	0	.	1	0.3	1	0.2
Range (years)		46-104		35-101		35-104
Mean (years)		82.6		80.1		81.0
Sex						
Male	57	30.5	104	31.4	161	31.1
Female	147	68.3	233	68.4	380	68.3
Unknown/Missing	2	1.3	1	0.3	3	0.6
Race/Ethnicity						
White (Non-Hispanic)	199	96.6	294	88.8	493	91.5
Non-White or Hispanic	5	2.4	41	10.0	46	7.3
Unknown/Missing	2	1.1	3	1.2	5	1.1
Urbanicity of County						
Rural	111	62.4	223	64.7	334	63.9
Urban	95	37.6	115	35.3	210	36.1

Table 2: Prevalence of edentulism (total tooth loss) by selected characteristics, 2019

Characteristic	Percent Edentulous	Lower 95% Confidence Limit	Upper 95% Confidence Limit
All Participants (n=544)	28.2	22.9	33.6
Age			
LT 65 years	35.6	19.5	51.7
65-74 years	33.1	20.8	45.5
75-84 years	29.0	20.3	37.7
85-94 years	23.4	17.8	29.0
95+ years	28.9	18.1	39.7
Sex			
Male	28.3	19.5	37.1
Female	28.2	21.0	35.3
Race/Ethnicity			
White (Non-Hispanic)	28.1	22.3	33.8
Non-White or Hispanic	32.7	16.6	48.7
Facility Type			
Assisted Living	20.2	13.4	27.0
Nursing	32.7	25.4	40.0
Urbanicity of County			
Rural	31.2	24.5	37.8
Urban	23.1	14.1	32.2

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Table 3: Prevalence of severe tooth loss (< 20 teeth) by selected characteristics, 2019

Characteristic	Percent with Severe Tooth Loss	Lower 95% Confidence Limit	Upper 95% Confidence Limit
All Participants (n=543)	55.9	50.3	61.5
Age			
LT 65 years	60.8	48.9	72.6
65-74 years	54.4	37.6	71.2
75-84 years	58.2	48.3	68.1
85-94 years	50.9	43.5	58.3
95+ years	69.0	58.0	80.0
Sex			
Male	60.7	53.3	68.0
Female	53.6	47.4	59.8
Race/Ethnicity			
White (Non-Hispanic)	55.2	49.2	61.2
Non-White or Hispanic	69.0	57.0	80.9
Facility Type			
Assisted Living	47.5	40.8	54.2
Nursing	60.5	52.8	68.2
Urbanicity of County			
Rural	59.2	52.5	65.8
Urban	50.1	40.3	59.9

Note: Information on total number of teeth present was missing for 1 participant.

Table 4: Oral health of *dentate* long-term care facility residents (n=404), 2019

Variable	Percent Yes or Mean	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Untreated decay (%)	46.6	37.3	55.9
Root fragments (%)	28.1	21.8	34.5
Suspicious soft tissue lesion (%)	14.6	6.1	23.1
Upper denture (%)	21.4	17.3	25.4
Lower denture (%)	9.5	5.9	13.1
Needs periodontal care (%)	30.6	18.8	42.4
Needs early or urgent dental care (%)	46.0	37.1	54.9
Needs urgent dental care (%)	9.3	3.5	15.1
Upper teeth present (mean)	9.1	8.6	9.6
Lower teeth present (mean)	10.8	10.4	11.1
Total number of teeth present (mean)	19.9	19.1	20.6

Note: Information on urgency of need for dental care was missing for 2 participants and information on number of upper teeth present and total number of teeth present was missing for 1 participant

Nebraska Oral Health Survey of Older Adults 2019

Table 5: Prevalence of untreated decay among *dentate* participants (n=404) by selected characteristics, 2019

Characteristic	Percent with Untreated Decay	Lower 95% Confidence Limit	Upper 95% Confidence Limit
All Dentate Participants	46.6	37.3	55.9
Age			
LT 65 years	60.8	37.0	84.6
65-74 years	46.1	26.3	65.9
75-84 years	42.4	29.5	55.3
85-94 years	45.9	35.4	56.4
95+ years	53.7	31.9	75.4
Sex			
Male	46.5	31.7	61.4
Female	47.0	37.5	56.4
Race/Ethnicity			
White (Non-Hispanic)	47.9	38.9	56.8
Non-White or Hispanic	32.3	6.8	57.8
Facility Type			
Assisted Living	44.3	31.4	57.2
Nursing	48.0	35.5	60.6
Urbanicity of County			
Rural	53.9	43.3	64.6
Urban	34.9	21.3	48.5

Table 6: Percentage needing periodontal care among *dentate* participants (n=404) by selected characteristics, 2019

Characteristic	Percent Needing Periodontal Care	Lower 95% Confidence Limit	Upper 95% Confidence Limit
All Dentate Participants	30.6	18.8	42.4
Age			
LT 65 years	46.3	17.7	74.8
65-74 years	36.7	18.8	54.6
75-84 years	32.0	17.2	46.9
85-94 years	26.7	12.6	40.9
95+ years	11.0	1.8	20.3
Sex			
Male	31.2	13.5	48.9
Female	30.3	16.2	44.4
Race/Ethnicity			
White (Non-Hispanic)	31.3	19.0	43.7
Non-White or Hispanic	12.4	2.0	22.7
Facility Type			
Assisted Living	30.6	9.3	51.9
Nursing	30.7	17.5	43.8
Urbanicity of County			
Rural	40.2	23.8	56.7
Urban	15.4	6.7	24.1

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Table 7: Percentage needing early or urgent dental care among *dentate* participants (n=402) by selected characteristics, 2019

Characteristic	Percent Needing Early or Urgent Care	Lower 95% Confidence Limit	Upper 95% Confidence Limit
All Dentate Participants	46.0	37.1	54.9
Age			
LT 65 years	53.8	33.3	74.4
65-74 years	55.5	35.3	75.6
75-84 years	39.0	27.4	50.5
85-94 years	43.9	35.0	52.8
95+ years	51.1	25.5	76.8
Sex			
Male	41.7	28.3	55.2
Female	47.9	38.1	57.7
Race/Ethnicity			
White (Non-Hispanic)	46.6	37.8	55.5
Non-White or Hispanic	32.3	6.8	57.8
Facility Type			
Assisted Living	42.3	30.4	54.2
Nursing	48.4	36.2	60.6
Urbanicity of County			
Rural	51.5	40.3	62.7
Urban	37.3	24.5	50.0

NOTE: Information on urgency of need for dental care was missing for 2 participants.

Table 8: Percentage needing urgent dental care among *dentate* participants (n=402) by selected characteristics, 2019

Characteristic	Percent Needing Urgent Care	Lower 95% Confidence Limit	Upper 95% Confidence Limit
All Dentate Participants	9.3	3.5	15.1
Age			
LT 65 years	5.1	-5.1	15.2
65-74 years	20.7	2.3	39.1
75-84 years	11.0	3.1	18.9
85-94 years	3.7	0.1	7.4
95+ years	10.4	-1.9	22.8
Sex			
Male	11.2	2.5	19.9
Female	8.5	2.4	14.6
Race/Ethnicity			
White (Non-Hispanic)	10.1	3.8	16.5
Non-White or Hispanic	0.0	0.0	0.0
Facility Type			
Assisted Living	6.2	0.3	12.1
Nursing	11.3	2.7	20.0
Urbanicity of County			
Rural	9.5	2.7	16.2
Urban	9.0	-1.6	19.6

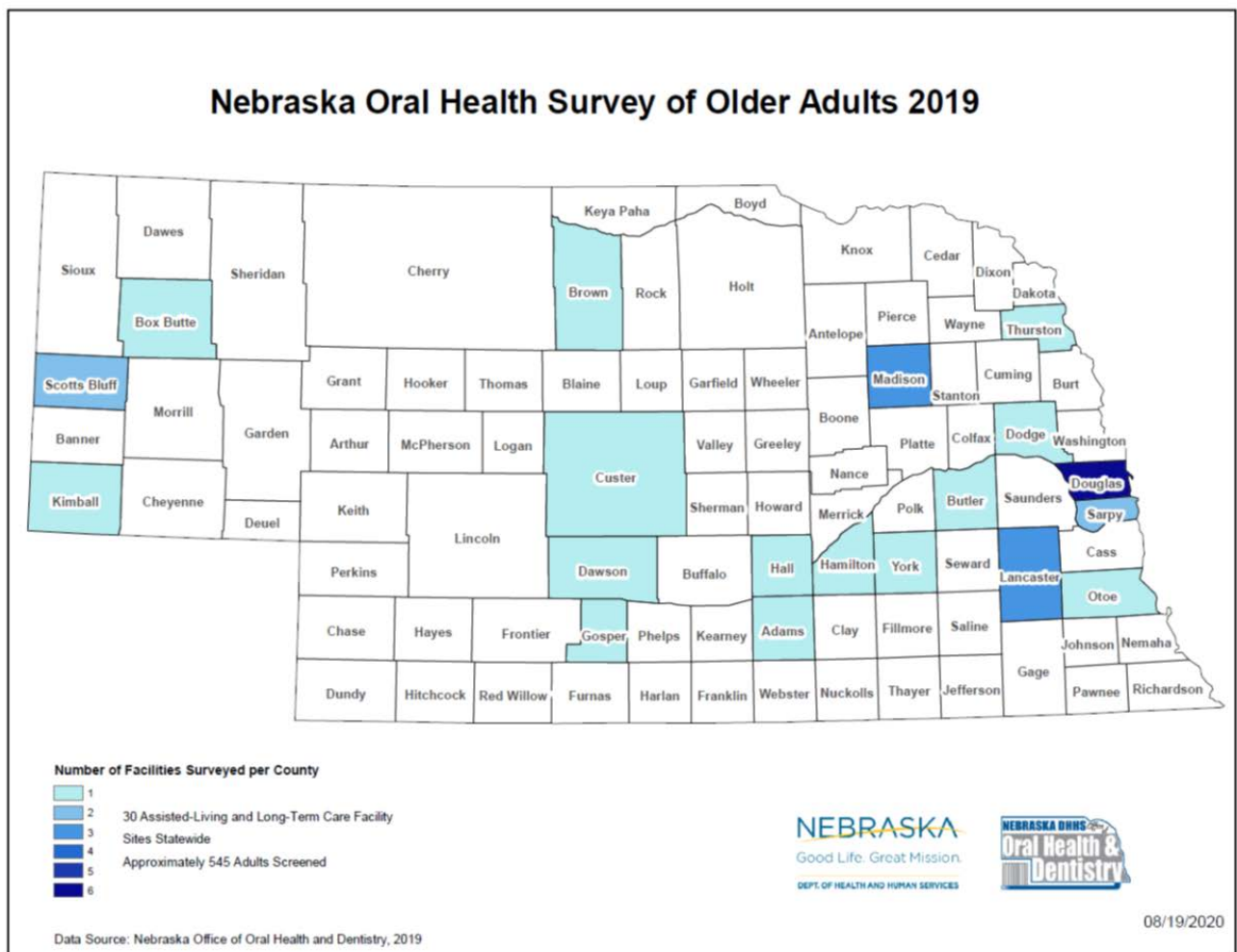
NOTE: Information on urgency of need for dental care was missing for 2 participants.

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Table 9: Oral health of *edentulous* participants (n=140), 2019

Variable	Percent Yes	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Has upper denture (%)	90.0	81.7	98.4
Has lower denture (%)	80.4	71.3	89.4
Has upper & lower denture (%)	79.9	70.3	89.5
Suspicious soft tissue lesion (%)	20.8	-0.6	42.3
Needs early or urgent dental care (%)	4.1	0.3	7.9
Needs urgent dental care (%)	2.1	-0.9	5.0

Map 2: Nebraska Oral Health Survey of Older Adults 2019 site map





THE ORAL HEALTH OF ADULTS RESIDING IN NEBRASKA'S ASSISTED-LIVING AND LONG-TERM CARE FACILITIES

FACILITY TYPES:



Assisted-living (AL) facility: A facility that provides shelter, food and non-nursing care to residents because of age, illness or physical disability



Long-term care (LTC) facility: A facility where nursing care or related services are provided to residents of the facility

WHO TOOK PART IN THE SURVEY

544 Residents aged 35-104 years (mean=81)

13 Assisted-living facilities

17 Long-term care facilities

RECOMMENDATIONS

- Expand programs that provide educational and preventative dental services at AL and LTC facilities, especially in rural counties.
- Develop programs that provide corrective and emergency dental services at AL and LTC facilities, especially in rural counties.
- Provide enhanced training to AL and LTC staff about the importance of daily oral hygiene services.
- Create a referral system between AL and LTC facilities and local health departments for residents with urgent dental needs.
- Consider the use of silver diamine fluoride treatment by public health hygienists for patients with transportation barriers.

ORAL HEALTH STATUS

PEOPLE WITH FEWER THAN 20 TEETH HAVE TROUBLE EATING HEALTHY FOOD

56% The percentage of residents with severe tooth loss

28% The percentage of residents with no natural teeth

TOOTH DECAY AND GUM DISEASE CAN CAUSE PAIN AND LIFE-THREATENING INFECTIONS

47% The percentage of residents with teeth who have untreated decay

31% The percentage of residents with teeth who have severe gum (periodontal) disease

RESIDENTS IN RURAL COUNTIES ARE MORE LIKELY TO NEED DENTAL CARE



52% of rural residents need restorative dental care compared to **37%** of urban residents



40% of rural residents need periodontal (gum) care compared to **15%** of urban residents

MANY LONG-TERM CARE FACILITY RESIDENTS HAVE NO DENTAL INSURANCE COVERAGE

Medicare does not cover most dental care and Medicaid only covers a limited number of dental services

Nebraska Department of Health & Human Services

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www.dhhs.ne.gov/dental



JULY 2020

DATA SOURCE: NEBRASKA ORAL HEALTH SURVEY OF LONG-TERM CARE FACILITIES, 2019