Factors Contributing to Poor Oral Health Outcomes in Rural Populations in the United States:

A literature review

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RESEARCH QUESTION

What factors contribute to higher rates of poor oral health outcomes in rural populations in the United States?

INTRODUCTION

Oral health refers to the care of teeth, gums, and the entire oral-facial system (CDC, 2024). Optimal oral health is a function of a healthy diet, hygiene, access to fluoride, and dental care (Cruz et al., 2022). While poor oral health is easily preventable, researchers estimate that oral diseases affect nearly 3.7 billion people worldwide (WHO, 2025). Oral diseases include dental caries, periodontal disease, edentulism, and oral cancer (WHO, 2025).

Dental caries, commonly known as cavities, are holes and areas of tooth decay that form from plaque buildup (Cleveland Clinic, 2023). People who have cavities and tooth decay experience symptoms of tooth sensitivity, mild to sharp pain when eating or drinking, and visible staining on teeth (Mayo Clinic, 2023). Globally, tooth decay affects 90% of adults aged 20 to 64 years and has a prevalence of around 50% of adults aged 45 to 64 (WHO, 2025). Furthermore, tooth decay affects an estimated 2.5 billion people (WHO, 2025).

Shifting from global patterns to a U.S. context, one in four adults suffer from periodontal disease. Due to this, poor oral health can lead humans to experience pain, poor school performance, diminished productivity, and a lower quality of life (CDC, 2024). A study in the United States found that adults 18 years and older lose more than 243 million work or school hours annually due to oral health problems (CareQuest, 2024). Approximately 5.7 million parents and guardians lose an estimated 38.5 million productivity hours due to their child's dental visits (CareQuest, 2024). In addition, neglecting oral health can accelerate the progression of chronic conditions (Fu et al., 2025). For instance, researchers link poor oral health to

cardiovascular disease, cancer, chronic respiratory disease, and diabetes (WHO, 2025). People with periodontal diseases are twice as likely to have coronary artery disease as people without periodontal disease (Oral Health Foundation, 2023). As a result of bacteria from periodontal disease: the bacteria travels to blood vessels throughout the body, which creates blood vessel inflammation (Harvard Health, 2025). Consequently, blood vessel inflammation leads to blood clots, which are precursors to heart attacks and strokes (Harvard Health, 2025). Additionally, researchers link poor oral health to respiratory diseases such as pneumonia (Oral Health Foundation, 2023). For those who have periodontal disease, breathing in fine droplets moves oral bacteria from the mouth to the respiratory tract, which increases the likelihood of a respiratory infection (Oral Health Foundation, 2023). Furthermore, poor oral health goes hand in hand with diabetes. Diabetic patients frequently suffer from salivary gland dysfunction and chronic inflammation, which increases the risk of oral infection and oral mucosal lesions (Fu et al., 2025).

While poor oral health is quite preventable, it serves as one of the largest financial healthcare burdens in the United States. In 2018, the United States reported total annual dental costs of $136 billion (Theriault et al., 2023). Compared to the $136 billion spent in 2018, the United States spent $174 billion on dental expenditures (ADA, 2023). Dental costs in the United States were only 3.8% of the total health expenditure that year (ADA, 2023). However, dental costs at the national level continue to grow briskly year-by-year (ADA, 2023).

Rural residents, in particular, experience adverse oral health outcomes compared to their urban counterparts. The characteristics of rural communities include: low population density, sparse infrastructure, and whose primary industry is agriculture (National Geographic, 2024). Rural environmental and socioeconomic conditions may contribute to oral health disparities. In

the United States, researchers found that 66.7% of urban residents went to the dentist in 2019, while only 57.6% of rural residents went to the dentist (Cha et al., 2021). Compared to urban residents, 34% of individuals in rural areas reported having fair or poor oral health, while only 27% of urban residents reported having fair or poor oral health (CareQuest, 2024). As a result, rural residents may face a higher likelihood of developing dental caries and oral cancers. For instance, rural residents exhibit a higher prevalence of dental caries (45%) than urban residents (25%) (Parmar et al., 2025). Additionally, around 60% of oral cancers are found at an advanced stage, which are preventable with greater dental visits (CDC, 2024). The gap between oral health in rural and urban areas emphasizes the need for understanding the risk factors associated with shaping oral health in rural communities.

Given these inequities, there is a need to identify what factors contribute to poor oral health outcomes in rural populations in the United States. This literature review focuses on all age groups in rural areas in the United States. This literature review aims to provide insight into the risk factors that contribute to poor oral health in rural communities across the United States.

METHODS

This literature review used PubMed to select current, peer reviewed articles that answer this literature review's question. PubMed is a comprehensive search engine that provides biomedical literature from life science journals and provides a wide range of journal articles that come from different resources. PubMed's extensive coverage allows for easy access to relevant articles about rural communities and oral health. This database originates in the United States, which is the target location of this literature review.

Inclusion & Exclusion Criteria

To ensure that all of the articles were relevant and reliable, inclusion and exclusion criteria were applied. Only articles that were published in the last 10 years (2015-2025) and were peer-reviewed academic journals were considered for this literature review. The keyword "rural" was used to ensure that each article includes rural geographical areas. Articles that did not focus on rurality were excluded. The keyword "United States" was utilized since this literature review focuses on oral health in only the United States. Only peer-reviewed articles were chosen for this literature review. Peer-reviewed articles were included and systematic reviews, meta-analyses, literature reviews, and editorials were excluded from this literature review. Only articles containing relevant information about oral health in rural communities in the United States were considered.

Rationale for Chosen Articles

Two isolated searches were completed on PubMed to find quality articles, which can be shown on *Table 1*. Two isolated searches yielded a wide array of non-redundant, relevant peer-reviewed articles. The first search round focuses on oral health and health disparities in rural parts of the United States. The first search term is "oral health" since it is important to find articles that focus on oral health. As shown in Table 1, the word AND was used in between each search term to expand the yielded results and provide diverse findings regarding health disparities for oral health. The second search round emphasized the geographical distribution of dental care and its effect on oral health. It was important to add this search round, as it found articles that better tied in rurality and geographic maldistribution of dentistry to oral health.

To assess each article, the title was first evaluated to see if the article includes relevant information for this literature review. Articles that included "rural" or "oral health" were found to have greater significance and relevancy when articles were selected. The preliminary

screening helped evaluate whether the article would focus on rurality for oral health disparities. If the information found in the preliminary screening was found to be irrelevant for this literature review, it was not used. If the article was found to have a relevant preliminary screening, the abstract would then be evaluated. Articles were selected that had abstracts that had information that supported the research question. Next, the methods section was read to determine whether the target location was accurate. This step ensured that the information focused on the United States, and if any Methods section included data from other countries, it would not be counted in this literature review. This thorough analysis of articles led to the selection of 15 articles which contain relevant, knowledgeable information applicable for the research question.

Table 1. PubMed Search Terms and Yielded Results

Search Rounds	**Search Criteria**	**Search Terms**	**Yielded Results (before criteria filters)**	**Yielded Results (after criteria filters)**	**Selected Articles**
Round 1	“2015-2025” “Peer-reviewed academic journals”	“oral health” AND “health disparities” AND “rural” AND “United States”	163	102	15
Round 2	“2015-2025” “Peer-reviewed academic journals”	“Oral health” AND “geographical” AND “rural” AND “United States”	94	57	5

RESULTS

People who live in rural communities consistently face adverse oral health outcomes. Throughout these 20 articles, three overarching themes emerged regarding rural oral health disparities: (1) geographical maldistribution of dentists, (2) income and insurance limitations, and (3) behavioral risk factors. These three themes illustrate the complex conditions that shape oral health in rural settings.

Geographic Maldistribution of Dental Professionals

Rural communities face significant barriers to obtain optimal oral health, particularly due to the geographic maldistribution of dental professionals. The location of dental professionals available creates a stark difference in the amount of dental care offered. One example of this is from an ecological study in Appalachia, a place known for having a large rural population. In this study, 364 Appalachian counties participated with 30,423 respondents in total (Feng et al., 2017). Some regions of the U.S., including Appalachia, have severe dental workforce shortages, such as Appalachian counties in West Virginia have only one practicing dentist, and 85.4% of Appalachian counties surveyed do not have one dentist per 2,000 residents (Feng et al., 2017). Across all of Appalachia, the average dentist-to-population ratio was 0.60 per 2,000 residents (Feng et al., 2017). Additionally, counties with higher dentist-to-patient ratios had greater county-level dental utilization rates, as 21% of the counties had a strong association with dental utilization with dentists (Feng et al., 2017). These findings indicate that counties with higher dental professional-to-patient ratios had residents more inclined to utilize dental services (Feng et al., 2017).

Areas other than Appalachia face dental professional shortages as well. A geospatial study identified 5,415 periodontists in all fifty states. Since 46.5% of U.S. adults 30 years or

older have periodontitis it is important to examine what disparities impact oral health (Eke et al., 2021). The study found that 96.1% of all periodontists were located in urbanized areas around the East Coast, West Coast, and MidWest, whereas only 0.8% practiced in rural areas (Eke et al., 2021). Across the United States, it was found that only 11% (18,673 of 168,299) of practicing dentists are located in rural areas. Furthermore, rural areas only have 3.6 dentists per 10,000 rural inhabitants while urban areas have 5.9 dentists per 10,000 urban inhabitants (Eke et al., 2021). In this study, a map of U.S. counties was presented, with darker colored counties indicating greater periodontitis. Results displayed that rural counties were the darkest, indicating extreme periodontitis (Eke et al., 2021). Due to the maldistribution of periodontists, rural residents areas are more likely to have periodontitis and a decreased awareness of what periodontitis is (Eke et al., 2021)

. In 2023, a cross-sectional study of U.S. dental clinics included 205,762 active dentists (Rahman et al., 2021). Results found that approximately 24.7 million people live in dental shortage areas in the United States, which means there is less than one dentist per 5000 people (Rahman et al., 2021). Studies found that there is an average of one dentist per 3,850 rural residents, while there is one dentist per 1,470 urban residents (Rahman et al., 2021). Based on these results, there is great need in expanding dental care access across the United States.

An observational study in Oklahoma surveyed 201 tribal and general residents of Oklahoma to investigate oral health concerns and attitudes (Llaneza et al., 2023). Results found that in rural areas, 60.7% of responses deemed dental workforce shortages and lack of dental services as barriers to oral health (Llaneza et al., 2023). Moreover, 62.2% of rural respondents ranked oral health services as urgent, which emphasizes the need for increased dental care in rural areas (Llaneza et al., 2023).

The geographic maldistribution of dental professionals does not only affect adults, it also affects children. A cross-sectional study examined the association between rurality and teeth condition, decay, and access to preventative dental care (Crouch et al., 2021). Results from 20,842 responses from the National Survey of Children's Health found that rural children were less likely to have preventive dental visits and fluoride treatments than their urban counterparts due to residence ($84.9 < 87.5$, $P = 0.03$) (Crouch et al., 2021). Additionally, children from rural areas were less likely to receive dental sealants, which suggests there is a need for better care and access to children in rural areas (Crouch et al., 2021).

Income and Insurance Limitations

While the geographic maldistribution of dental professionals significantly contributes to oral care disparities, income and insurance also play a critical role. Income and insurance limitations strongly correlate to oral health status in multiple articles found. For instance, a cross-sectional ecological study found that the lack of Medicaid/CHIP greatly contributed to urban-rural dental disparities (Serban et al., 2022). This study was completed in ten southeastern states: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas (Serban et al., 2022). In the study, eight of the ten states had 90% of children with public insurance live 15 minutes away from a participating dentist, while the other two states had 79% and 89% (Serban et al., 2022). Furthermore, whether a family has public or private dental insurance plays a large factor into the amount of dental care they receive. For publicly insured children who live in rural areas, only 73.6% had similar access to privately insured children while 93.8% of publicly insured children who live in urban areas had dental access similar to urban children with private insurance (Serban et al., 2022).

A cross-sectional study done in north-central Appalachia examined predictors of dental care in 1,178 children (Nelson et al., 2021). Results found that children in Pennsylvania (42.8%) were less likely to seek regular dental care than children in West Virginia (57.2% (Nelson et al., 2021). In both Pennsylvania and West Virginia, the strongest predictor of oral care was insurance status (Nelson et al., 2021). 82% of dentally insured participants responded “yes” to going to the dentist, while only 17.2% attended the dentist without dental insurance (Nelson et al., 2021).

A multistage, cluster study was completed in Colorado with 1100 respondents (Tiwari et al., 2017). This study found that tooth loss in older adults (65+) who live in rural areas was strongly associated with being uninsured (Tiwari et al., 2017). In the survey, it asked whether the participant has or does not have dental insurance and the odds ratio for the question was 4.70 and p value was 0.01, meaning there is a strong positive association between lack of dental insurance and tooth loss (Tiwari et al., 2017).

Due to the lack of access to dental insurance, many people do not access routine dental checkups. In a study that examined 216,184 noninstitutionalized adults in both rural and urban communities, obtaining dental insurance was determined to be the main barrier to receiving dental treatment (Lee et al., 2020). This study compared how the implementation of the Affordable Care Act (ACA) impacted dental access in rural areas (Lee et al., 2020). Urban areas reported a higher likelihood of having preventative checkups and utilizing dental treatment after the ACA was implemented (Lee et al., 2020). Dental treatment and services utilization increased from 40.8-58.3% in 2011-2013 to 45.0-59.0 in 2014-2016 (Lee et al., 2020). Additionally, it was found that after the ACA, the dental insured rate increased from 46.9% to 49.4% (Lee et al., 2020). Findings indicated that rural areas benefitted from the ACA, and that rural residents were more likely to seek dental treatment (Lee et al., 2020).

Insurance coverage disparities impact rural-living adults, who are disproportionately enrolled in Medicaid compared to their urban peers. For example, in a study that explored rates of insurance coverage in southeastern Louisiana, 25% of the rural population were Medicaid enrollees, and 16% were totally uninsured (Afaneh et al., 2020). Furthermore, over 30% of rural residents had untreated dental caries, which is higher than the national prevalence of 18.6% (Afaneh et al., 2020). Results found that children with cavities, 0.82 for rural and 0.58 for urban, were found to have decreased quality of life and school performance (Afaneh et al., 2021).

A longitudinal study used data from the Appalachian Clinical and Translational Science Institute Division of Clinical Informatics to find what are the risk factors for tooth loss in rural areas (Khanna et al., 2022). In West Virginia, the state that leads the nation in edentulism, only 61% of adults visited a dentist in the past year due to economic constraints (Khanna et al., 2022). Dental charges nearly quadrupled from 2010 to 2018 from $776.64 to $3136.79 (Khanna et al., 2022). Additionally, Medicaid was the primary payer in 2018 while only a third of the payer in 2010 (Khanna et al., 2022). Based on the results, insurance status was a large predictor whether a patient had an ER visit for oral health (Khanne et al., 2022).

Older adults and children both face challenges to gain optimal oral health due to income. Children who live in rural areas are more than twice as likely to have untreated tooth decay as children with family incomes greater than 200% of the federal poverty level (Cao et al., 2017). Additionally, high income children are only 3.7 miles away from the dentist while low income children are 17.2 miles away from the dentist (Cao et al., 2017). The distance due to income levels demonstrates children who live farther away, who likely live in a rural area, are less likely to have treatment are more likely to develop tooth loss (Cao et al., 2017).

A cluster randomized control was conducted in the Navajo Nation (518 participants) to examine barriers to oral health (Bryant et al., 2016). Low income tended to play a large factor with regard to oral health. Over 50% of the participants had below $10,000 as their annual family income (Bryant et al., 2016). Parents were asked to rate their oral health, with 42% rating their oral health as “poor” (Bryant et al., 2016). Children had an average of 19.9 decayed or missing teeth, which is a very high disease burden (Bryant et al., 2016). Furthermore, children whose families were in the lowest income level had the lowest mean participation (6.25) in fluoride varnish and oral health promotion events (Bryant et al., 2016).

A cross-sectional study of 1,311 participants from western Pennsylvania and central West Virginia examined rural-urban differences in oral health, and concluded income is a predisposing and enabling factor (Zhou et al., 2021). The study found that rural adults were less likely to have an income of at least $25,000 and dental insurance coverage (Zhou et al., 2021). 53.8% of rural residents said they faced difficulties obtaining dental care compared to only 31.3% of urban residents (Zhou et al., 2021). The greatest barrier to dental visits was income disparities, as 89.1% of rural residents identified cost as the reason to not utilize dental care services (Zhou et al., 2021).

A study in West Virginia and Pennsylvania examined 868 adults to identify oral health disparities in rural areas (Chen et al., 2019). Results found that dental insurance and income level were significant predictors in dental care utilization (Chen et al., 2019). For instance, dental insurance had an odds ratio of 2.20, meaning dental insurance 2.2 times more likely to enable dental utilization (Chen et al., 2019). Income level had an odds ratio of 1.21% which means there is an increase of dental utilization with greater income levels (Chen et al., 2019). Furthermore,

the p value for both results are less than 0.001, which shows a close association between income and insurance levels and dental care (Chen et al., 2019).

Behavioral Risk

Within the rural communities, there were several sociocultural factors that played a large difference in oral health. One key socioeconomic factor that played a large role in oral health is the prevalence of smoking. A retrospective study of 4,528 participants in Alabama assessed rural-urban disparities regarding head and neck cancer (Mukherjee et al., 2020). 67% of patients in rural counties were former or current smokers while only 60.9% were in urban counties (Mukherjee et al., 2020). Compared to patients that never smoke, current and past smokers had significantly reduced odds (0.63 vs 0.41) of getting diagnosed young (Mukerjee et al., 2020).

Another retrospective study of 10,544 adult patients in North Carolina found similar findings that tobacco use was more common in rural areas, and therefore an enabling factor for poor oral care (Gillone et al., 2023). 33% of all rural residents in the study were smokers, which shows that rural areas in North Carolina have significant smoking prevalences (Gillone et al., 2023). Additionally, these smokers exhibited significantly greater periodontitis levels (83.9%) as compared to nonsmokers (77.7%) (Gillone et al., 2023).

A study was completed in northern, rural Florida with 2,260 participants to identify factors associated with oral cancer screening (Wong et al., 2021). Results found that smokers were significantly less likely to undergo oral cancer screening than nonsmokers, OR = 0.77 (Wong et al., 2021). One possible explanation for this is that smokers may be less likely to seek dental care (Wong et al., 2021). Another reason they may not get oral screening is because rural residents have decreased access to screening sites in their area (Wong et al., 2021).

A randomized crossover study took place in rural Appalachian Ohio, where 30 adults were evaluated on their oral nicotine behavior (Keller-Hamilton et al., 2023). The study found that rural Appalachian Ohio residents were more likely (27% among men, 26% among women) to smoke cigarettes compared to urban residents in Ohio (23% among men, 21% among women) (Keller-Hamilton et al., 2023). Since smoking behavior tends to have higher rates in rural areas, it may contribute to poorer oral health outcomes compared to urban areas (Keller-Hamilton et al., 2023).

It was also found that perceived beliefs and knowledge about oral health played a role in oral health status in rural and urban residents. A cross-sectional study in Northern California assessed the beliefs, knowledge, and behaviors associated with the risk of childhood caries (Heaton et al., 2018). 53 Native American women were chosen from three different tribal communities in Northern California and were assessed about the possible barriers to oral care (Heaton et al., 2018). It was found that 88% of mothers had high knowledge about basic oral health knowledge, however, only 47.2% were knowledgeable about preventative services such as fluoride varnish (Heaton et al., 2018). Fewer mothers knew that cavities were caused by germs in the mouth (67.9%) and that it is best to use toothpaste with fluoride (64.2%) (Heaton et al., 2018).

DISCUSSION

Implications of Research

The reviewed studies exemplify that residents of rural areas are more susceptible to decreased dental access and treatment than urban residents. The geographic maldistribution of dentists, income and insurance limitations, and behavioral risk factors all contribute to these

disparities. Understanding the causes of oral health disparities is essential for future progress in creating effective interventions and policy implementations.

To improve oral health in rural areas across the United States, the healthcare system must execute strategies to increase dental care access in rural communities. One of the strategies to make dental care access more affordable and available to those who live in rural communities is through teledentistry. Teledentistry serves to connect patients with oral health providers in a face-to-face manner behind a video screen (NCSL, 2025). Therefore, teledentistry reduces the impact that the geographical maldistribution of dentists has on dental access. For instance, a study in the rural western region of New York found that out of 1,168 children, 81.6% completed their recommended treatment plan using teledentistry (Shah et al., 2024). Teledentistry acts as an educational tool for dental providers to enhance dental knowledge for patients, which ultimately improves the quality of oral care (NCSL, 2025). Furthermore, teledentistry allows for people to obtain dental care at home, which benefits people who may not have geographical access to dentists.

In North Carolina, teledentistry connected 71 rural patients to oral pathology specialists (Flores-Hidalgo et al., 2023). As North Carolina has an average of only six dentists per 10,000 residents, which qualifies the state as a dental professional shortage, it is important that oral health services become more widely available (Flores-Hidalgo et al., 2023). Of the 71 participants, 57 received biopsies with an average of only 9.6 days of waiting for diagnosis (Flores-Hidalgo et al., 2023). The teledentistry had an F score of 0.80, which indicates that the teledentistry assessments compared to the biopsy results were accurate 80% of the time (Flores-Hidalgo et al., 2023). Consequently, these statistics demonstrate that providers can effectively use teledentistry to diagnose patients in a reasonable amount of time while in a

dental-professional shortage area. Results from this study demonstrate that teledentistry can help alleviate transportation difficulties, mobility issues, and the social isolation from rural areas (Flores-Hidalgo et al., 2023). Therefore, teledentistry should be considered as an effective intervention for reducing oral health disparities in rural areas.

An additional way to increase access to oral health care is through school-based dental screenings. A study conducted the effectiveness of dental screenings in schools in four different countries, with one country being the United States (Arora et al., 2022). Eight trials involving 21,290 children aged 4 to 15 years were examined (Arora et al., 2022). Specifically in the United States, researchers selected fourteen elementary schools: eight in urban areas and four in rural areas (Arora et al., 2022). Through the use of dental screening in schools, there was a 39% increase in attendance at dental clinics (Arora et al., 2022). Additionally, dental screening interventions at schools motivate students to take better care of their oral health (Arora et al., 2022). For example, in comparison to the control group, the motivation group had a 208% increase in dental attendance (Arora et al., 2022). These findings suggest that dental screenings are an effective strategy to promote optimal oral health habits and increase dental services.

Another way to reduce rural-urban disparities regarding oral health is through policy intervention. In recent years, there has been thought of expanding Medicaid to include dental coverage. Medicaid serves as dental insurance for 60 million Americans that live in rural areas (American Association of Public Health Dentistry, 2025). However, Medicaid dental coverage is limited to certain states. The expansion of Medicaid to include dental coverage and emergency coverage in the remaining states would help combat this oral health issue (American Association of Public Health Dentistry, 2025). A study from 2000 to 2012 examined how Medicaid adult dental coverage affects dental treatment between states (Decker et al., 2015). This study found

that implementing dental coverage into Medicaid is associated with a 12.9% increase in the likelihood of a yearly dental visit for Medicaid beneficiaries compared to the control group (Decker et al., 2015). The control group consisted of low-income adults not enrolled in Medicaid (Decker et al., 2015). Thus, expanding Medicaid dental coverage across states can bring greater oral care access to underserved communities. In addition, Medicaid dental coverage will relieve rural residents from the high cost of dental expenses.

Although policy changes and teledentistry are important in improving oral health in rural communities, educational interventions could be equally beneficial. Research shows that instruction in oral care can substantially improve patients'self care and oral habits (Community Oral Health, 2024). Educational prevention aims to build the patient's knowledge to maintain a healthy mouth and develop daily healthy habits (Community Oral Health, 2024). In the state of Idaho, the state has the Idaho Oral Health Alliance, which provides preventative services and oral health education to students (Idaho Oral Health, 2023). One example of their programs is located in southeast Idaho, which is a sealant program called the Happy & Healthy Smiles School-Based Sealant Program (Idaho Oral Health, 2023). This educational intervention provides dental screenings, cleanings, sealants, and fluoride varnish to students that are less likely to receive oral care (Idaho Oral Health, 2023). In 2024, the program saw 567 kids and provided 2,012 dental sealants, which was an increase in dental sealants from the prior year (1,697) (Idaho Oral Health, 2024). Another program that focuses on education is Grins on the Go, which prioritizes education for low-income schools and provides dental sealant and fluoride varnish (Idaho Oral Health, 2024). In 2024, Grins on the Go provided preventative services and education to more than 23,000 students throughout Idaho and helped 200,000 students in total (Delta Dental, 2025). Additionally, Grins on the Go is run through Delta Dental, which provides

preventative educational dental services to more than 80 million Americans in all fifty states (Delta Dental, 2025). Overall, the Idaho Oral Health Alliance is one of the many programs in the United States that educate students and reduce geographical disparities.

Through the execution of educational interventions, expansion of Medicaid, dental procedures, and teledentistry, rural residents will hopefully one day be able to receive a higher quality of dental care. Moreover, through the expansion of these interventions, more rural residents can learn the importance of maintaining proper oral health. Over time, such efforts may reduce rural-urban oral health disparities and promote healthier communities.

Limitations

Within this literature review, there are several limitations. The first limitation is the geographical location these articles focused on. While all 20 articles focused on the United States, there was not an equal distribution of geographic regions. For instance, many of the articles focused on the South, primarily in Texas, North Carolina, Alabama, and Mississippi. While this literature review provides great knowledge about rural-urban differences in the Southeastern region of the United States, it provides little information about rural-urban differences in other regions. Since factors driving oral health vary across the country, findings from this literature review may be hard to generalize to the United States as a whole. Furthering oral health research in states that are not in the southeastern region of the United States could strengthen the results found about rural-urban inequalities.

Other limitations of this literature review include sampling and response bias. Several of the articles had small sample sizes which could make the results of these studies difficult to generalize. Additionally, many of these studies contained self-reported responses about dental procedures and oral health. Some people could have underreported how many times they see a

dentist or underreported the state of their oral health. Tobacco use could have also been underrepresented, even though it is a significant risk factor and a confounding variable for oral health. Expanding sample sizes can reduce response bias and strengthen the results of this literature review.

The last limitation of this literature review is the inconsistency of the term "rural." Different articles classify "rural" and "urban" by different characteristics, which could lead to inconsistent results. For instance, one article defines rural as being 60 miles from dental care (Serban, 2022), while another article defines rural as 1 dentist per 3,850 people (Rahman, 2024). Varying definitions of the term "rural" make it difficult to draw strong conclusions. Additionally, not all articles defined rural, further weakening the reliability of the results.

Conclusion

Barriers to oral health services have persisted for decades, though these inequalities are gradually reducing. Efforts to reduce rural-urban inequalities for oral health can be supported through policy intervention, education programs, teledentistry, and increasing Medicaid dental coverage. As society becomes more technology-oriented, teledentistry delivers promising results to narrow the oral health gap between urban and rural communities. If policy interventions and strategies continue to flourish, rural communities across the United States will improve access to dental care.

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