



## THE IMPACT OF ACCESS TO DENTAL SERVICE ON PUBLIC HEALTH: A LITERATURE REVIEW

Eveline Yulia Darmadi \*, Yessy Andriani Fauziah, Maria Laurentia Sanjaya

Faculty of Dental Medicine, Universitas Ciputra Surabaya  
Citraland CBD Boulevard, Made, Kec. Sambikerep 60219, Surabaya, Indonesia  
Email: [eveline.darmadi@ciputra.ac.id](mailto:eveline.darmadi@ciputra.ac.id)

### Abstract

Access to dental services is critical in determining public health status, yet significant disparities persist, especially in remote areas. This literature review explores the impact of limited access to dental care on public health. The review methodology involved analyzing recent studies addressing the various factors—economic, geographical, and social determinants—influencing access to dental services in different communities. The results indicate that individuals with restricted access to dental care are more prone to oral diseases, which can lead to a decline in overall health and quality of life. Furthermore, these communities often face higher treatment costs due to the need for more complex procedures when issues are untreated for extended periods. The findings highlight that limited access to dental services increases the burden on healthcare systems and exacerbates inequalities in health outcomes. In conclusion, improving access to dental services, particularly in underserved and rural areas, is essential to mitigate the negative effects of oral diseases, reduce healthcare costs, and improve public health outcomes in the long term. Addressing these disparities is crucial for promoting equitable health opportunities for all.

**Keywords:** Dental Services, Public Health, Healthcare Disparity, Oral Disease

### Introduction

Access to dental services is a critical determinant of public health, substantially impacting the overall well-being of populations. Severe repercussions, including increased morbidity and economic burden on healthcare systems, can result from untreated oral diseases due to disparities in access to dental care. Many factors that influence access have been identified in existing research, such as the availability of dental providers, geographic location, and socioeconomic status. Previous research has demonstrated a correlation between enhanced access to dental services and improved health outcomes; however, there are still gaps in our comprehension of the extent and subtleties of this impact across various populations.<sup>1</sup> While much of the existing literature emphasizes the importance of dental care access, there are notable gaps in understanding specific barriers different demographic groups face. Factors such as age, ethnicity, and income have been shown to influence access to dental services, yet comprehensively analyzing how these factors interplay remains underexplored. For instance, low-income individuals often experience higher prevalence rates of oral diseases, suggesting that financial constraints play a significant role in their ability to secure necessary dental care. Furthermore, rural populations may face geographic barriers, such as long travel distances to dental clinics, which can deter individuals from seeking care.<sup>1,2</sup>

Several systemic concerns, such as the absence of dental insurance and the restricted availability of dentists in specific areas, contribute to the disparities evident in oral health outcomes. Research indicates that uninsured persons are less inclined to seek dental care, heightening the likelihood of

encountering more serious oral health issues. Understanding these systemic barriers is essential for formulating effective interventions to improve access to dental care for vulnerable groups. The significance of dental care access is underscored by the fact that many individuals face barriers that prevent them from receiving necessary treatments. Financial constraints, lack of insurance, and geographic disparities in service availability are among the most common obstacles reported by patients.<sup>2</sup>

This literature review aims to synthesize findings from existing research and address the critical gaps related to access to dental services. By evaluating the consequences of limited access to public health, the review will present informative insights to guide policymakers, healthcare practitioners, and educators in crafting targeted strategies for improving dental service accessibility. Ultimately, this exploration highlights the significance of equitable dental care access as a keystone for enhancing public health and reducing community health disparities. Moreover, by examining successful care and intervention strategies models, this review will provide valuable recommendations for future research directions and public health initiatives. Identifying effective approaches that have successfully increased access to dental services can serve as a foundation for broader implementation. Through a comprehensive understanding of the intricate relationship between access to dental care and public health outcomes, policymakers can be better equipped to craft legislation and guidelines that promote oral health equity and advance the well-being of all population segments.<sup>3</sup>

Finally, the review will also consider the impact of technological advancements in improving access to dental services, such as tele-dentistry and mobile dental units. These innovations have the potential to bridge gaps in care, particularly in underserved areas, by providing remote consultations and outreach services. The literature review will emphasize the need for integrating modern solutions into public health strategies by exploring how technology can enhance access. Detecting and addressing the factors influencing access, alongside leveraging technology, is crucial for fostering a healthcare environment that prioritizes inclusivity and comprehensive care for all individuals.

## **Method**

This literature review examines existing research on the impact of dental service accessibility on public health. The population of this study includes published articles, reports, and relevant studies from reputable journals and organizations within the past decade. The sample selection is based on the relevance of the studies to the research topic, focusing on peer-reviewed articles, government reports, and institutional publications.

## **The Relationship Between Access to Dental Services and Public Health**

Public health outcomes are significantly influenced by access to dental services. The prevalence of oral diseases is directly correlated with the availability and utilization of dental care, which in turn affects the quality of life and overall health. Research has consistently demonstrated that dental caries, periodontal diseases, and other oral health issues are more prevalent in areas with restricted access to dental services. For example, enhanced oral health outcomes, such as reduced dental caries and improved oral hygiene practices, are associated with regular dental visits, as highlighted by a systematic review.<sup>4</sup> The World Health Organization (WHO) emphasizes that oral health is integral to overall health, and access to dental services is crucial for preventing and managing oral diseases. Poor oral health can have far-reaching effects, contributing to systemic health issues such as cardiovascular diseases, diabetes, and respiratory infections. Therefore, understanding the barriers to accessing dental care is essential for developing effective public health strategies that promote oral health and reduce health disparities.<sup>5</sup>

Socioeconomic factors significantly influence access to dental care. Individuals from lower-income backgrounds often face financial barriers that deter them from seeking regular dental services. This economic disparity leads to pronounced oral health inequities, as evidenced by higher rates of untreated dental conditions in underserved populations. Research indicates that oral diseases disproportionately affect groups with limited economic resources and lower educational attainment, underscoring the need for targeted public health interventions. Geographical location is another critical determinant of dental service accessibility. Rural areas, often termed "dental deserts," experience a scarcity of dental professionals, compelling residents to travel long distances for care or forgo it altogether. This geographic maldistribution exacerbates oral health disparities between urban and rural populations. For example, an estimated 60 million people in the United States reside in areas with dentist shortages, leading to unmet dental needs and adverse health outcomes.<sup>6</sup>

Access to dental services is also significantly influenced by geographic location. Rural communities frequently encounter substantial obstacles in obtaining dental care due to inadequate transportation options and a scarcity of providers. The distance to dental facilities can deter individuals from seeking care, leading to untreated dental issues that can escalate into more severe health problems. Public health initiatives that focus on improving transportation options and increasing the number of dental providers in underserved areas are essential for enhancing access to care.<sup>7</sup> Cultural factors also play a role in dental service utilization. Misinformation, traditional beliefs, and language barriers can deter individuals from seeking professional dental care. Community-based education and culturally sensitive interventions are essential to bridge these gaps and promote oral health literacy. A scoping review identified cultural factors as one of the main determinants affecting access to dental services, highlighting the importance of culturally tailored health promotion strategies.<sup>8</sup>

The impact of limited access to dental services extends beyond oral health, influencing systemic health conditions. Poor oral health has been linked to chronic diseases such as diabetes and cardiovascular ailments. Ensuring access to dental care can mitigate these risks, emphasizing the interconnectedness of oral health and overall well-being. A literature review assessing dental care programs found that providing access to dental care can improve health outcomes and reduce healthcare utilization costs.<sup>9</sup> Public health approaches to improving access to dental services are multifaceted. Strategies include policy reforms, community-based programs, and the integration of dental care into primary healthcare services. For example, involving non-dental healthcare professionals in oral health promotion has shown promise in reaching broader populations and addressing disparities. A review highlighted the effectiveness of oral health promotion interventions delivered by non-dental health workers in improving oral health outcomes among people with type 2 diabetes.<sup>10</sup> Barriers to dental care access are particularly pronounced among vulnerable populations, such as people experiencing homelessness. Challenges include financial constraints, lack of insurance, and limited availability of services tailored to their needs. Addressing these barriers requires targeted interventions and policies aimed at inclusivity and equity. A systematic literature review on homeless adults emphasized the need for strategies to improve their access to dental services and oral health.<sup>11</sup>

### **The Role of Government and Health Policies in Improving Access to Dental Services**

The government's planning and implementation of effective health policies are essential for assuring equitable access to dental services. The availability and affordability of dental care can be substantially influenced by policies prioritizing oral health as an essential component of public health. Numerous nations have integrated oral health into their national health programs to guarantee that marginalized communities receive sufficient care. Nevertheless, the efficacy of these policies is contingent upon government commitment, infrastructure, and funding. One of the key aspects of government intervention is subsidizing dental care for low-income populations. Countries with universal healthcare systems, such as the United Kingdom and Canada, provide basic dental services

as part of their public health coverage. However, dental care remains largely privatized in many developing countries, making it unaffordable for many citizens. Expanding public funding for dental services can bridge the gap between economic status and access to essential oral healthcare.<sup>12</sup>

Preventive dental care policies have proven cost-effective and beneficial for public health. Governments that invest in community-based prevention programs, such as water fluoridation and school-based dental checkups, have reported lower incidences of dental caries and periodontal diseases. Education campaigns on oral hygiene and regular checkups can also improve health outcomes. However, the success of these initiatives depends on sustained funding and active participation from healthcare professionals.<sup>8</sup> Regulatory policies governing the dental profession also play a critical role in determining access to dental services. Licensing requirements, workforce distribution, and continuing education programs impact the quality and availability of care. In many countries, an unequal distribution of dentists in urban and rural areas leads to disparities in dental service access. Policies encouraging dentists to practice in underserved regions, such as student loan forgiveness programs or financial incentives, can help address this issue.<sup>13</sup>

Telemedicine and mobile dental clinics have emerged as innovative solutions to improve access to dental services in remote areas. Governments that invest in these alternative healthcare delivery models can reach populations that face geographic or financial barriers. Tele-dentistry allows patients to consult with professionals without needing to travel, while mobile clinics provide on-site treatment in underserved communities. However, regulatory frameworks must support the expansion of these services to ensure their long-term sustainability. Oral health policies must also focus on vulnerable populations, including children, the elderly, and people with disabilities. Pediatric dental programs, geriatric dental care, and specialized services for individuals with disabilities ensure that all citizens receive appropriate oral healthcare. Governments should allocate funding for specialized training and facilities to address the unique needs of these populations.<sup>13</sup>

The role of insurance and reimbursement policies in dental care accessibility cannot be overlooked. In many countries, dental procedures are not fully covered by health insurance, making out-of-pocket expenses a significant barrier for patients. Expanding insurance coverage to include preventive and essential dental services can encourage more people to seek timely care, reducing the burden of untreated dental diseases. Policymakers must work with insurance providers to create affordable plans that cover a wide range of dental treatments.

## **Discussion**

Dental services remain a substantial public health issue, with disparities apparent in various geographic regions and socioeconomic categories. Data from numerous studies suggest that marginalized populations, individuals with reduced income levels, and those residing in rural areas encounter the most significant challenges in obtaining essential dental care. In underserved regions, common barriers include the absence of insurance coverage, high treatment costs, and a scarcity of dental professionals. The data also indicates that these disparities result in elevated rates of untreated dental caries, periodontal disease, and other oral health complications, which subsequently contribute to systemic health issues. The relationship between access to dental services and public health is a multifaceted issue that has significant implications for individual and community well-being. Access to dental care is essential for preventing and treating oral diseases, which can have far-reaching effects on overall health. Research indicates that improved access to dental services is associated with better oral health outcomes, reduced incidence of dental diseases, and enhanced quality of life.<sup>14</sup>

The accessibility of dental services is significantly influenced by government policies, as evidenced by a survey of healthcare reports. In contrast to countries with predominantly privatized dental services, those with universal healthcare systems that include dental care provisions report

superior oral health outcomes. Furthermore, it has been demonstrated that community-based programs and mobile dental clinics can enhance accessibility in rural regions, thereby minimizing disparities in oral healthcare. Additionally, research indicates that innovative strategies, including tele-dentistry and digital health records, are increasingly being employed to address the disparity between traditional dental care and the resources available to populations with limited access. Tele-dentistry initiatives enable patients to consult with dental professionals remotely, thereby reducing the necessity for physical visits and facilitating early intervention for oral health issues. In the same vein, public health campaigns designed to raise awareness and promote preventive care have successfully reduced the prevalence of preventable dental diseases.<sup>15</sup>

The findings of this review highlight the complex and multifaceted nature of dental service accessibility and its implications for public health. Economic, geographic, and systemic factors primarily drive disparities in access to dental care. The financial burden of dental treatment remains a significant barrier, particularly in countries where dental care is not fully integrated into national healthcare systems. This issue underscores the need for policy reforms that promote affordable and equitable dental services for all populations. Geographic disparities further compound the challenge, with rural and underserved areas experiencing a shortage of dental professionals and facilities. Expanding mobile clinics, community dental programs, and tele-dentistry initiatives could play a crucial role in bridging this gap. Moreover, incorporating preventive oral health education into school curricula and public health campaigns may help reduce the overall burden of dental diseases by promoting early intervention and routine care.<sup>16</sup>

The significance of government policy and healthcare infrastructure is undeniable. Countries that effectively incorporate dental services into their universal healthcare systems exhibit superior oral health outcomes. Policymakers should contemplate adopting methods that have effectively diminished inequities and enhanced accessibility. Technological breakthroughs, especially in artificial intelligence and digital diagnostics, present novel options to improve access to dental treatment. AI-powered diagnostic instruments can facilitate early identification and treatment strategizing, diminishing dependence on in-person consultations. Furthermore, incorporating electronic health data into dental practice can enhance patient management and ensure continuity of care. Social determinants of health also play a role in shaping access to dental services. Educational campaigns targeting at-risk populations can increase awareness and encourage better oral health practices. Moreover, collaborative efforts between dental professionals, community leaders, and policymakers can drive sustainable solutions to improve access to care.<sup>16</sup>

A crucial factor to consider is the involvement of dental experts in tackling accessibility issues. Augmenting workforce diversity and motivating dental practitioners to operate in underprivileged regions helps expand the accessibility of dental care. Training programs prioritizing community engagement and preventive care can enhance practitioners' ability to address inequities successfully. Public-private partnerships may enhance access to dental treatment. Through collaboration with private sector companies, governments can execute economical solutions, including subsidized dental programs, outreach campaigns, and new financing methods, to enhance the affordability and accessibility of dental treatment.<sup>17</sup>

Future studies should investigate the enduring effects of interventions on oral health outcomes. Longitudinal studies and thorough assessments of policy modifications might yield profound insights into successful techniques for guaranteeing sustained enhancements in dental healthcare accessibility and public health results. Furthermore, it is essential to underscore the significance of community-based participatory research approaches that engage stakeholders in the study process. Involving populations directly impacted by access discrepancies can provide significant insights into their specific issues and preferences. This collaborative method guarantees that future interventions are culturally pertinent and

customized to particular community requirements, promoting more effective and significant enhancements in oral health accessibility.<sup>18</sup>

Addressing the complex difficulties of dental care accessibility necessitates a holistic strategy that includes legislative reform, community involvement, technological advancement, and cooperative efforts among diverse stakeholders. Through the implementation of focused policies, governments and healthcare professionals can eliminate obstacles to dental treatment together, thereby enhancing public health outcomes and diminishing oral health inequities.

## Conclusion

Access to dental services is a crucial determinant of public health, influencing overall well-being, quality of life, and healthcare equity. Financial constraints, geographic limitations, and inadequate workforce distribution hinder optimal dental care access, disproportionately affecting marginalized populations. Government policies, health insurance expansion, and technological advancements, including teledentistry, play essential roles in bridging these gaps. Integrating dental services into primary healthcare systems and implementing community-based preventive measures can significantly improve oral health outcomes. Fostering public-private partnerships and continuously evaluating policy effectiveness ensures sustainable progress in dental healthcare accessibility. Despite these efforts, disparities persist, necessitating further innovation and global collaboration to achieve universal dental care access. Future policies should emphasize affordability, accessibility, and quality, ensuring that dental services are not a privilege but a fundamental healthcare right. By addressing social determinants of oral health and promoting interdisciplinary approaches, healthcare systems can create a more inclusive framework that prioritizes dental care as an integral component of overall health, ultimately enhancing population-wide well-being and reducing healthcare disparities.

## References

- [1]. Limo L, Nicholson K, Stranges S, Gomaa N. Suboptimal Oral Health, Multimorbidity, and Access to Dental Care. *JDR Clin Trans Res*. 2024 Oct 1;9(1):13S-22S.
- [2]. Liu PP, Wen W, Yu KF, Gao X, Mei Wong MC. Dental care-seeking and information acquisition during pregnancy: A qualitative study. *Int J Environ Res Public Health*. 2019;16(14).
- [3]. Samkharadze S, Zurmukhtashvili M, Kokhraidze E, Kharashvili E, Beriashvili S. Availability of Dental Services for Medical Students in Georgia. In 2023.
- [4]. Mohd Khairuddin AN, Bogale B, Kang J, Gallagher JE. Impact of dental visiting patterns on oral health: A systematic review of longitudinal studies. Vol. 10, *BDJ Open*. 2024.
- [5]. Paisi M, Baines R, Burns L, Plessas A, Radford P, Shawe J, et al. Barriers and facilitators to dental care access among asylum seekers and refugees in highly developed countries: a systematic review. *BMC Oral Health*. 2020;20(1).
- [6]. Akbar FH, Pasinringi S, Awang AH. Relationship between health service access to dental conditions in urban and rural areas in Indonesia. *Pesqui Bras Odontopediatria Clin Integr*. 2019;19(1).
- [7]. Ferreira Da Silva CH, Costa EC, Melo Leite ACR De, Nascimento VB Do. Socioeconomic and Demographic Contexts of Brazilian and International University Students Regarding the Use of Dental Services. *Int J Dent*. 2022;2022.
- [8]. Ghanbarzadegan A, Balasubramanian M, Luzzi L, Brennan D, Bastani P. Inequality in dental services: a scoping review on the role of access toward achieving universal health coverage in oral health. *BMC Oral Health*. 2021;21(1).

- [9]. Ghoneim A, Ebnahmady A, D'Souza V, Parbhakar KK, He H, Gerbig M, et al. The impact of dental care programs on healthcare system and societal outcomes: a scoping review. *BMC Health Serv Res.* 2022;22(1).
- [10]. Llaneza AJ, Seward J, Holt A, Stephens LD. Oral Health Workforce and American Indian and Alaska Native Communities: a Systematic Review. Vol. 11, *Journal of Racial and Ethnic Health Disparities.* 2024.
- [11]. Goode J, Hoang H, Crocombe L. Homeless adults' access to dental services and strategies to improve their oral health: A systematic literature review. Vol. 24, *Australian Journal of Primary Health.* 2018.
- [12]. Song J, Kim JN, Tomar S, Wong LN. The impact of the Affordable Care Act on dental care: An integrative literature review. Vol. 18, *International Journal of Environmental Research and Public Health.* 2021.
- [13]. Hannan CJ, Ricks TL, Espinoza L, Weintraub JA. Addressing Oral Health Inequities, Access to Care, Knowledge, and Behaviors. *Prev Chronic Dis.* 2021;18.
- [14]. Chi DL, Lenaker D, Mancl L, Dunbar M, Babb M. Dental therapists linked to improved dental outcomes for Alaska Native communities in the Yukon-Kuskokwim Delta. *J Public Health Dent.* 2018;78(2).
- [15]. Ghanbarzadegan A, Sohn W, Wallace J, Brennan DS, Jamieson LM. Examining the Effect of Income-Based Inequalities and Dental Service Provision on Dental Service Utilization among Older Australians: A Multiple Mediation Analysis. *JDR Clin Trans Res.* 2024;9(3).
- [16]. Asfari E, Rodriguez A, Dakessian A, Yuan S. Exploring refugees' experience accessing dental health services in host countries: a scoping review. Vol. 5, *Frontiers in Oral Health.* 2024.
- [17]. Amegbor PM, Rosenberg MW. The use of dental care services in Alberta, Manitoba, Newfoundland, and Labrador: A comparative analysis. *Canadian Geographer.* 2018;62(3).
- [18]. Castillo KB, Echeto L, Schentrup D. Barriers to dental care in a rural community. *J Dent Educ.* 2023;87(5).