

## China's Urbanization: Impact on Oral Health in Major Cities

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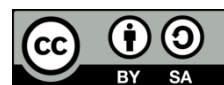
### ABSTRACT

Urbanization in China has brought about significant changes in lifestyle, dietary habits, and healthcare access, profoundly influencing oral health trends and presenting new challenges in major cities. This paper synthesizes current literature and epidemiological data to explore the multifaceted impact of urbanization on oral health in China.

Key trends include rising prevalence of dental caries and periodontal diseases among urban populations, linked to shifts towards high-sugar diets, inadequate oral hygiene practices, and lifestyle factors exacerbated by urban living conditions.

Challenges posed by urbanization include disparities in oral health services distribution, with rural-to-urban migrants facing barriers in accessing quality dental care. This inequity underscores the urgent need for targeted public health interventions, enhanced oral health education, and policy reforms to promote equitable access to dental services and improve oral health outcomes in China's major cities.

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## I. INTRODUCTION

The rapid pace of urbanization in China has not only reshaped the skyline of its major cities but has also significantly impacted various aspects of public health, notably oral health. The transformation from rural to urban living has introduced both opportunities and challenges in the health sector, with a particular emphasis on oral health care. Given the importance of maintaining oral health for overall well-being, understanding its relationship with urbanization becomes crucial. This discussion gains relevance in the context of recent china news, highlighting how urban advancements and lifestyle changes influence health standards and service accessibility in the country.

The sections that follow delve into the urbanization trends in China, providing an overview of the current state of oral health across its major cities. It explores the intricate ways in which the shift towards urban living has affected oral health, including governmental initiatives aimed at improving health services, the disparity in health access and outcomes based on socioeconomic status, the negative impact of urban pollution, and the crucial role of public awareness in promoting oral health. Furthermore, the article considers the future prospects of oral health in the context of continuing urban growth and concludes with reflections

on the steps needed to ensure the well-being of China's urban population. Through this comprehensive analysis, readers will gain insights into the multifaceted relationship between urbanization and oral health in China, a topic of rising importance in china news and health discussions.

Urbanization in China, defined as the migration from rural to urban areas, has been a significant aspect of the country's development. Historically, this process was not exclusively modern but was notably accelerated by industrialization and modernization [1] <https://www.statista.com/statistics/270162/urbanization-in-china/>. In the early days of the People's Republic of China, urban areas were designed with the purpose of developing a socialist citizenry. This design included the construction of work units called danwei, which integrated housing, jobs, food, healthcare, and other elements of the iron rice bowl [2] [https://en.wikipedia.org/wiki/Urbanization\\_in\\_China](https://en.wikipedia.org/wiki/Urbanization_in_China). The urban population saw a great leap during the "Great Leap Forward" from 1958-1961 due to massive industrialization efforts. However, during the Cultural Revolution from 1965–1975, urban growth stalled due to the rustication movement, where urban youth were moved to the countryside [2] [https://en.wikipedia.org/wiki/Urbanization\\_in\\_China](https://en.wikipedia.org/wiki/Urbanization_in_China).

#### Recent Developments

Since the economic reforms of 1978, China's urbanization has seen a significant acceleration. The urban population grew from less than 10% in 1949 to over 50% by the 1990s, marking the first time the urban population reached such a significant proportion [2] [https://en.wikipedia.org/wiki/Urbanization\\_in\\_China](https://en.wikipedia.org/wiki/Urbanization_in_China). The degree of urbanization rose from 36% in 2000 to about 51% in 2011, with the urban population surpassing rural residents for the first time [1] <https://www.statista.com/statistics/270162/urbanization-in-china/>. This rapid urbanization has been driven by the migration of surplus agricultural workers displaced by the agricultural responsibility system and a broadening of criteria for classifying an area as a city or town in 1984 [3] <https://www.lincolnst.edu/publications/working-papers/new-trend-urbanization-china/>.

The recent focus has been on sustainable urban growth and the reclassification of millions of rural hukou holders as urban residents, with a goal to urbanize 250 million citizens by 2025 as part of a long-term green modernization plan [4] <https://pubmed.ncbi.nlm.nih.gov/27995225/>. This includes the development of small cities and towns, which accommodate a large proportion of the urban population, and a shift in development focus from large cities to suburban and county towns due to land shortage and competition [3] <https://www.lincolnst.edu/publications/working-papers/new-trend-urbanization-china/>.

## II. Overview Of Oral Health In China

Oral health in China has historically been a neglected aspect of public well-being, with many individuals foregoing regular dental checkups and professional dental cleaning. This neglect is reflected in the widespread prevalence of dental conditions such as caries and periodontitis. Recent epidemiological surveys have highlighted alarming statistics, such as the average elderly individual aged 65 and above having nearly ten missing teeth, and the prevalence of calculus among those aged 35 to 44 exceeding 96 percent [5] <https://www.statista.com/topics/12453/oral-health-and-dental-care-in-china/>.

### Current Oral Health Status

The oral health status in China reveals a concerning trend of dental health neglect over the years. The most recent oral health epidemiological survey pointed out that each elderly Chinese aged 65 and above typically suffers from multiple missing teeth. Furthermore, a significant portion of the middle-aged population exhibits high rates of dental calculus, indicating a widespread lack of effective oral hygiene practices [5] <https://www.statista.com/topics/12453/oral-health-and-dental-care-in-china/>.

### Major Oral Health Issues

Dental caries and periodontal disease are the predominant oral health issues in China, significantly impacting the middle-aged and elderly populations. These conditions are not only prevalent but are also major contributors to tooth loss in these age groups. The caries prevalence rates among children aged 5 and 12 years are notably high at 70.1% and 34.5%, respectively. Despite improvements, the tooth filling ratio remains low compared to developed countries, underscoring the ongoing challenges in dental care access and quality [6] <https://www.nature.com/articles/s41368-017-0006-6>.

In addition to the direct impact on health, oral diseases pose a significant economic burden. They rank as the fourth highest cause of financial strain from diseases in most industrialized countries. The global direct treatment costs for dental diseases amount to approximately 298 billion USD annually, which represents a substantial portion of global health expenditure. In China, the financial implications are similarly severe, with substantial costs associated with dental care and treatments [6] <https://www.nature.com/articles/s41368-017-0006-6>.

As China continues to urbanize, the demand for dental services is increasing, with more individuals seeking treatments beyond basic teeth cleaning. Services such as dental implants are becoming more popular, reflecting a growing awareness and willingness to invest in oral health. This shift is particularly noticeable among the younger population and women, who are more likely to prioritize dental health and opt for advanced orthodontic procedures [5] <https://www.statista.com/topics/12453/oral-health-and-dental-care-in-china/>.

### III. Influence Of Urbanization On Oral Health

Urbanization in China has significantly altered access to healthcare services, including dental care. With urban expansion, there has been an increase in healthcare facilities that can potentially enhance oral health outcomes. Urban areas generally provide better access to health services, improved water quality, and enhanced sanitation infrastructure [7] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8885621/>. These developments can contribute positively to oral health by reducing the incidence of oral diseases linked to poor hygiene and inadequate water quality.

#### Access to Dental Care

Despite the potential benefits, urbanization also presents challenges in oral healthcare accessibility. The rapid growth of cities can lead to uneven distribution of healthcare resources, where dental care facilities might not keep pace with the growing population. This can result in increased wait times and reduced frequency of dental visits, especially among lower-income urban residents. Moreover, the cost of dental care in urban areas can be prohibitive, as the economic burden of dental treatment often leads to significant out-of-pocket

expenses for many individuals. In China, more than 85% of total dental costs are borne directly by the patients, which restricts access to necessary dental services [6] <https://www.nature.com/articles/s41368-017-0006-6>.

#### Lifestyle Changes

Urban lifestyles also contribute to changes in dietary habits and stress levels, which can adversely affect oral health. The shift towards nutritionally unbalanced diets, high in sugars and processed foods, increases the risk of dental caries and other oral health issues [7] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8885621/>. Furthermore, urban living often correlates with higher stress levels, which can lead to neglect of personal care, including oral hygiene. Stressful lifestyles in urban settings have been linked to increased prevalence of periodontal diseases due to neglect of regular dental care and poor dietary choices [7] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8885621/>.

Additionally, environmental factors associated with urbanization, such as increased air pollution, can exacerbate respiratory conditions that influence oral health. The presence of pollutants like PM2.5 in urban areas has been shown to have a direct impact on respiratory health, which is closely tied to oral health conditions [7] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8885621/>.

Overall, while urbanization offers improved access to dental care and health services, it also introduces lifestyle and environmental challenges that need to be addressed to safeguard oral health in China's expanding urban populations.

#### Government Initiatives

##### Healthy China 2030

In October 2016, the Central Committee of the Communist Party of China and the State Council released the "Healthy China 2030" blueprint. This comprehensive plan consists of 29 chapters and outlines ambitious goals to improve the nation's health by advocating healthy lifestyles, enhancing health services, optimizing health industries, and ensuring basic medical services for every citizen by 2020. The blueprint sets forth objectives for China's health sectors to meet or exceed the standards of developed countries by 2030 [6] <https://www.nature.com/articles/s41368-017-0006-6>.

As part of this initiative, the State Council issued the 13th five-year plan for health in December 2016, which is integral to the national economic and social development plans. This health plan emphasizes the inclusion of oral health examinations as a routine component of physical check-ups and integrates interventions for populations at risk of oral diseases into a comprehensive chronic disease prevention program. Additionally, it promotes healthy lifestyle choices such as reducing intake of salt, fat, and sugar, and it encourages the development of the oral health industry to meet growing demands [6] <https://www.nature.com/articles/s41368-017-0006-6>.

##### Recent Policies on Oral Health

Following the strategic directions set by President Xi during the National Health and Wellness Conference, a series of governmental documents were released, highlighting the high priority placed on public health and specifically on oral health. These documents serve as a policy framework supporting the integration of oral health into broader health policies. They emphasize building primary barriers against oral diseases, adopting combined strategies for the entire population and high-risk groups, and fostering a massive health-centered

oral health industry [8]  
[https://www.researchgate.net/publication/320893532\\_Focus\\_on\\_the\\_recent\\_state\\_policy\\_for\\_oral\\_health\\_in\\_China](https://www.researchgate.net/publication/320893532_Focus_on_the_recent_state_policy_for_oral_health_in_China).

The National Program for Chronic Disease Control and Prevention, printed and distributed by the General Office of State Council in January 2017, is another crucial document under the "Healthy China 2030" plan. It targets five major chronic diseases, including oral diseases, and outlines specific strategies such as promoting oral health education from preschool through middle school, developing supportive technologies and instruments for personal oral health care, and enhancing community-based early intervention efforts. The program also aims to reduce the caries prevalence rate to below 30% by 2025 through measures like topical fluoridation and pit and fissure sealing [6] <https://www.nature.com/articles/s41368-017-0006-6>.

These initiatives reflect a significant shift towards improving oral health as an integral part of China's public health agenda, recognizing the impact of oral health on overall well-being and economic productivity.

Socioeconomic Disparities

#### **IV. Rural Vs Urban Areas**

In China, the disparity in dental care accessibility between urban and rural areas is pronounced. Studies reveal that dental services in China's megacities are unevenly distributed, with rural areas suffering from a significant lack of resources. This includes an insufficient number of dental departments and a sparse dental workforce, which are primarily concentrated in urban centers [6] <https://www.nature.com/articles/s41368-017-0006-6>. Consequently, rural residents often delay seeking dental care due to the inaccessibility of services and the high costs associated with out-of-pocket expenses [1] <https://www.statista.com/statistics/270162/urbanization-in-china/>. Despite the economic advancements in megacities, the urban-rural divide in healthcare service allocation remains substantial, with rural areas within these cities still facing significant disparities [8] [https://www.researchgate.net/publication/320893532\\_Focus\\_on\\_the\\_recent\\_state\\_policy\\_for\\_oral\\_health\\_in\\_China](https://www.researchgate.net/publication/320893532_Focus_on_the_recent_state_policy_for_oral_health_in_China).

Income and Oral Health

Income levels play a crucial role in determining access to dental care in China. Individuals with higher socioeconomic status, characterized by better education, income, and occupational status, are more likely to utilize dental services [Model 3]. This is reflected in the higher odds of visiting a dentist among urban residents who are typically covered by more comprehensive health insurance schemes compared to their rural counterparts [odds ratio (OR) = 1.57, 95% confidence interval (CI) = 1.30 to 1.91] [9] <https://www.sciencedirect.com/science/article/pii/S2414644719300090> [10] <https://www.sciencedirect.com/science/article/pii/S0013935122000895> [11] <https://www.mdpi.com/2071-1050/15/5/4064>.

The insurance coverage for rural residents under the New Cooperative Medical Scheme (NCMS) is notably less comprehensive, with complicated reimbursement procedures that do not cover dental treatment expenses, further exacerbating the accessibility issues for lower-income populations [12] <https://www.jnr.ac.cn/EN/10.11849/zrzyxb.2013.10.001>. Additionally, the Gini coefficient, a measure of income inequality, has been rising, indicating a widening gap that correlates with disparities in oral health outcomes. Lower-income groups and vulnerable populations, such as the elderly and disabled, often experience greater difficulties in accessing necessary dental care [13]

[https://link.springer.com/chapter/10.1007/978-981-13-1408-7\\_1](https://link.springer.com/chapter/10.1007/978-981-13-1408-7_1) [1]

<https://www.statista.com/statistics/270162/urbanization-in-china/>.

This socioeconomic divide not only affects the ability to obtain dental care but also influences the general health and well-being of individuals across different income brackets, highlighting the need for more inclusive health policies and interventions to bridge these gaps.

#### Impact of Pollution in Urban Areas

##### Air Quality and Oral Health

The degradation of air quality in urban areas of China has become a critical environmental challenge. Studies indicate that motor vehicle emissions have now surpassed coal as the main source of PM<sub>2.5</sub> pollution in cities such as Beijing, Hangzhou, and Jinan. This shift contributes significantly to regional air quality issues and impacts sustainable urban development [11] <https://www.mdpi.com/2071-1050/15/5/4064>. The presence of high Aerosol Optical Depth (AOD) values, which correlate positively with road network density, highlights areas with severe air pollution [11] <https://www.mdpi.com/2071-1050/15/5/4064>. These environmental factors not only compromise respiratory health but also have a direct impact on oral health conditions. Poor air quality can exacerbate respiratory conditions that are closely linked to oral health, increasing the risk of periodontal diseases.

##### Water Quality Issues

Water pollution in urban areas also poses significant risks to oral health. The exposure to essential trace heavy metals like iron, manganese, copper, and zinc in drinking water has been associated with an increased risk of periodontitis [14] <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-023-16391-3>. Studies suggest that there is a potential threshold effect between copper exposure and the prevalence of periodontitis, indicating that even low levels of copper in drinking water can increase the risk of this oral disease [14] <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-023-16391-3>. Despite the critical need for safe drinking water, the standards for drinking water in China were last updated a decade ago, with new standards set to be implemented in April 2023. This delay highlights the urgency for a dynamic update mechanism for drinking water standards to better reflect the latest research linking health outcomes with water quality [14] <https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-023-16391-3>. The proposed updates are crucial for addressing the growing burden of periodontitis and other health impairments linked to poor water quality in urban settings.

## V. Role of Public Awareness

Public awareness plays a crucial role in enhancing oral health outcomes, especially in the context of China's rapid urbanization. Effective public health campaigns and community initiatives have been instrumental in educating the population about the importance of oral health and encouraging preventive practices.

### Health Education Campaigns

One of the most significant national efforts in this area is the "Love Teeth Day," an annual campaign that has been conducted since 1989. This campaign highlights the commitment of China to oral health promotion and has been a pivotal part of raising awareness across the country. The Peking University School of Stomatology has been a key player, organizing this event to promote oral health education nationwide [15]

<https://capp.mau.se/bank-of-ideas/china-an-oral-health-education-program-in-wuhan-city/> [16]

<https://ss.bjmu.edu.cn/Html/News/Articles/2907.html>.

Additionally, the World Health Organization's Health Promoting Schools Project has been implemented in experimental schools over a three-year period. This initiative integrates oral health into general health and school education activities, focusing on diet and nutrition. Teachers receive specialized training through workshops conducted by district education officers and dentists, ensuring that they are well-equipped to deliver classroom-based oral health education. Students participate in daily oral hygiene instructions, and activities are supervised by public health dentists to maintain high standards and effectiveness [15]

<https://capp.mau.se/bank-of-ideas/china-an-oral-health-education-program-in-wuhan-city/>.

The impact of these educational efforts is evident, with experimental schools showing significant improvements in regular oral health behaviors such as tooth brushing, recent dental visits, and the use of fluoride toothpaste. Moreover, the involvement of mothers in these sessions has led to significant development in oral health attitudes and self-care in the experimental group [15] <https://capp.mau.se/bank-of-ideas/china-an-oral-health-education-program-in-wuhan-city/>.

#### Community Initiatives

Community-based interventions have also been significant. The "Smile Around the World" initiative, led by the FDI and the Chinese Stomatological Association (CSA), focuses on rural areas, where access to oral care is often limited. This initiative delivers a series of educational workshops to elementary schools, helping children establish good oral health habits from a young age. These efforts are part of the broader Healthy China 2030 vision, which aims to incorporate health into all policies and engage the whole government in health promotion [17] <https://www.fdiworlddental.org/how-china-shaping-future-oral-health-fdi-world-dental-congress-2020-shanghai>.

Moreover, comprehensive interventions for children's oral health have provided oral examinations to 10 million children across China, with treatments such as pit and fissure sealants and topical fluoride applications being administered to millions. These initiatives not only address immediate oral health needs but also build a foundation for healthier future generations [16] <https://ss.bjmu.edu.cn/Html/News/Articles/2907.html>.

Through these multifaceted approaches, public awareness campaigns and community initiatives in China are making significant strides in improving oral health. The integration of oral health education into broader health and policy frameworks demonstrates a strong determination to tackle oral health challenges comprehensively and sustainably.

#### Future Prospects

The trajectory of oral health in China is closely linked to the nation's ambitious urban development and healthcare initiatives. The Healthy China 2030 plan, a comprehensive strategy aimed at integrating health into all policies, underscores the government's commitment to enhancing the well-being of its citizens. This plan specifically includes provisions to improve oral health, with campaigns designed to elevate public awareness about oral diseases and promote preventive measures [17] <https://www.fdiworlddental.org/how-china-shaping-future-oral-health-fdi-world-dental-congress-2020-shanghai>.

#### Sustainable Urban Development

The concept of sustainable urban development in China embraces a holistic approach that combines health, environment, and urban planning. The government's efforts to guide the transformation of urban areas into health-promoting environments are evident in initiatives like the Healthy City project. This project shifts the focus from a treatment-centered approach to one that equally emphasizes prevention and health promotion, integrating oral health into the broader context of non-communicable diseases (NCDs) management [6] <https://www.nature.com/articles/s41368-017-0006-6>. The proactive involvement of local governments in these initiatives ensures that health responsibilities are shared across society, enhancing the effectiveness of health policies and their implementation [6] <https://www.nature.com/articles/s41368-017-0006-6>.

#### Innovations in Oral Health Care

Innovations in oral health care are pivotal to addressing the needs of China's growing urban population. The development of China Dental Valley in Ziyang is a prime example of how urban areas are becoming centers of excellence for oral health services. This project aims to merge oral health care with tourism, creating a unique model where health and leisure coexist. The concept, inspired by global best practices, focuses on providing high-quality dental care in settings that encourage relaxation and well-being [18] [http://sc.china.com.cn/2023/english\\_news\\_0508/493055.html](http://sc.china.com.cn/2023/english_news_0508/493055.html).

The establishment of specialized towns like China Dental Town further illustrates the innovative approach to oral health care. These towns are designed to offer comprehensive services that include diagnosis, treatment, rehabilitation, and elderly care, all within a health-oriented community setting. Regular health education events and the integration of oral health services with cultural and recreational activities make these towns attractive not only to local residents but also to international visitors seeking health services [18] [http://sc.china.com.cn/2023/english\\_news\\_0508/493055.html](http://sc.china.com.cn/2023/english_news_0508/493055.html).

The future of oral health in China is shaped by a confluence of government leadership, community engagement, and innovative health care models. These efforts are aligned with global health objectives and demonstrate China's role as a key player in the global health landscape. As urbanization continues to evolve, the integration of health into every aspect of urban development remains a priority, promising improved oral health outcomes and overall well-being for the population.

## VI. Conclusion

Throughout this exploration, we delved into the intricate dance between urbanization and oral health in China, uncovering both the positive developments and the persisting challenges. The transformation of China's landscape—both physically and demographically—has brought about profound changes in the accessibility and quality of oral healthcare. Initiatives like the "Healthy China 2030" blueprint signify the nation's commitment to integrating health care into the fabric of urban development, demonstrating a forward-thinking approach to tackling oral health disparities. Despite these advancements, the journey towards equitable oral health care is ongoing, marked by efforts to bridge the urban-rural divide, combat pollution's detrimental effects, and raise public awareness about oral health importance.

Looking forward, the continuity of urban growth and healthcare initiatives spotlighted in this discussion underscores the importance of sustained innovation, community engagement, and policy integration. China's endeavors to promote oral health through public awareness campaigns, the establishment of health-promoting



urban environments, and the pioneering of novel oral health care models offer a blueprint for improving overall well-being amidst rapid urbanization. As China continues to evolve, the lessons learned and the strategies implemented will not only shape the future of oral health within its borders but also contribute to global conversations on health equity and urban planning. The path ahead is complex, yet filled with opportunities to enhance the quality of life for China's urban dwellers through comprehensive and accessible oral healthcare.

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