

# Addressing Challenges of Dental Problems in Pakistan: A Comprehensive Review

<sup>1</sup>Syed Rohid Asad, <sup>1</sup>Malaika Khan, <sup>2</sup>Syed Aizad Asad, <sup>3</sup>Syed Aswad Asad, <sup>4</sup>Naseem Zahra, <sup>4</sup>Qurat-ul-Ain Syed

<sup>1</sup>Faryal Dental College (FDC), Lahore.

<sup>2</sup>University College of Medicine & Dentistry (UCMD), Lahore.

<sup>3</sup>Akhtar Saeed Medical & Dental College (AMDC), Lahore.

<sup>4</sup>Food & Biotechnology Research Centre, Pakistan Council of Scientific and Industrial Research Laboratories Complex Lahore Pakistan.

**\*Corresponding Author:** Naseem Zahra, Food & Biotechnology Research Centre, Pakistan Council of Scientific and Industrial Research Laboratories Complex, Lahore, Pakistan.

**Received date: December 18, 2024; Accepted date: January 04, 2024; Published date: January 25, 2024**

**Citation:** Naseem Zahra, Syed Rohid Asad, Malaika Khan, Syed Aizad Asad, Syed Aswad Asad, Qurat-ul-Ain Syed (2024), Addressing Challenges of Dental Problems in Pakistan: A Comprehensive Review, *International Journal of Biomed Research*, 3(1): DOI:10.31579/2834-5029/042

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## Abstract

People in Pakistan are facing numerous dental issues, including dental cavities, periodontal disorders, and oral malignancies, exacerbated by limited availability of oral healthcare facilities, particularly in remote regions. Dental caries, gum disease, and oral infections are prevalent due to high sugar intake, poor dental care habits, and ignorance. Access to dental healthcare services is difficult especially in underprivileged and rural areas, with limited facilities and dental experts. Socioeconomic factors like poverty, illiteracy, and cultural attitudes significantly influence oral health outcomes. Gaps in dental services between urban and rural areas and lack of oral health education contribute to these inequities. Water fluoridation issues also contribute to tooth decay. To overcome these challenges, a multidimensional strategy involving professional advocacy, community involvement, and government intervention is needed, including strengthening oral healthcare infrastructure, promoting oral health education, improving access to care, enhancing the regulatory framework, and collaborating efforts.

**Keywords:** pakistan; dental caries; dental clinics; socioeconomic factors; water fluoridation; oral healthcare; regulatory framework; who

## 1. Introduction

People in Pakistan are confronted with a multitude of dental issues, such as elevated incidence of dental cavities, periodontal disorders, and oral malignancies. These issues are further exacerbated by restricted availability of oral healthcare facilities, particularly in remote regions. These issues not only have an impact on people's dental health but also place a strain on the economy and healthcare system<sup>1</sup>.

## 2. Epidemiology of Dental Challenges

In Pakistan, periodontal and dental caries are widespread conditions that impact people of all ages. High sugar intake, poor dental care habits, and ignorance all contribute to the high incidence rates. The prevalence of oral cancer is also rising, and because screening facilities are scarce and presentations delayed, the disease is frequently discovered at a late stage<sup>1</sup>.

## 3. Challenges or Dental Problems in Pakistan

### 3.1 Prevalence of Oral Diseases

In Pakistan, dental issues like cavities (dental caries), gum disease (periodontal disease), and oral infections are widespread. This prevalence is primarily due to insufficient oral hygiene habits, limited access to dental services, and dietary choices that impact oral health<sup>2</sup>.

#### 3.1.1 Dental Caries

Dental caries, an age-old affliction, is acknowledged as a condition that can impact individuals across all demographics, including ethnicity, age, gender, and socioeconomic standing. This multifaceted disease arises from a combination of host, agent, and environmental factors<sup>3</sup>. Nowadays, effective management of dental caries predominantly relies on assessing its risk, underscoring the crucial need to determine its prevalence within specific populations<sup>4</sup>.

As per the World Health Organization (WHO), dental caries continues to pose a significant challenge across the globe, affecting nearly every nation. Various definitions of dental caries exist within the field. Nevertheless, dental caries is widely recognized as a complex condition triggered by the interplay of fermentable carbohydrates, acid-producing bacteria, and various host factors, including saliva. The primary culprit behind caries is the acidification resulting from the breakdown of dietary carbohydrates by bacteria present in saliva and plaque<sup>5</sup>.

Dental caries and periodontal diseases are widely recognized as significant contributors to tooth loss, and in severe cases, can lead to complete tooth loss (edentulism), causing significant functional limitations and impairments<sup>6</sup>. Consequently, dental caries has imposed a substantial global burden on oral health, negatively impacting both oral health and overall quality of life, particularly in regions with limited economic resources<sup>7</sup>.

### 3.1.2 Gum Disease

Periodontal disease is a slow and progressive condition that poses a threat to the gums and other supportive structures around the teeth. In the most common type, known as gingivitis, the gums become inflamed and prone to bleeding easily<sup>8</sup>. Gingivitis can be managed through regular and thorough plaque removal. However, if left untreated, it can advance to periodontitis, a more severe form of the disease<sup>9</sup>. In periodontitis, pockets of infection may develop between the teeth and gums, leading to eventual destruction of the bone supporting the teeth. This can result in otherwise healthy teeth becoming loose and potentially being lost<sup>10</sup>.

### 3.2 Difficult access to oral healthcare

Getting access to dental healthcare services is still quite difficult, especially in underprivileged and rural regions<sup>11</sup>. The concentration of dental facilities in metropolitan areas and the scarcity of dental experts make access inequities worse<sup>12</sup>. Many people are further prevented from receiving timely dental treatment by cost and insurance coverage issues<sup>13</sup>.

### 3.3 Inadequate infrastructure and resources

In Pakistan, the provision of high-quality dental treatment is hampered by inadequate financing, obsolete technology, and inadequate infrastructure<sup>14</sup>. Dental clinics in the public sector frequently lack necessary supplies, which results in poor treatment and disgruntled patients. Even if they are better prepared, low-income people sometimes cannot afford to visit private dental clinics<sup>15</sup>.

### 3.4 Socioeconomic Factors

Socioeconomic circumstances significantly influence oral health results in Pakistan. Those from low-income families frequently encounter obstacles in obtaining dental care due to financial limitations. As a result, they may delay seeking treatment for dental issues until they reach a critical stage, resulting in deteriorating oral health consequences<sup>16</sup>.

In Pakistan, socioeconomic variables are a major determinant of oral health outcomes. Disparities in disease prevalence are a result of oral health practices being influenced by poverty, illiteracy, and cultural attitudes. Furthermore, the cycle of poor oral health is sustained by the disregard for dental care in favor of basic necessities and the absence of oral health education<sup>17</sup>.

### 3.5 Poverty, illiteracy, and cultural beliefs affecting oral health

Social and cultural variables, such as poverty, illiteracy, and ideas about oral health, all have a substantial impact on oral health outcomes and oral health practices. There is a scarcity of dental professionals in rural regions of Pakistan, which exacerbates the discrepancies in access to treatment<sup>18</sup>. This is because of the country's economic inequities, which push aspiring physicians to choose higher-paying urban employment. And for many people, especially those from marginalized communities, the high cost of dental treatment, which is impacted by the dentist's expertise and patients' desire for a more aesthetically pleasing clinic, presents an economic challenge<sup>19</sup>. Socioeconomic considerations also have an impact on how high a priority dental care should be in household finances<sup>20</sup>.

### 3.6 Gaps in dental services between urban and rural areas

There are still gaps in dental care availability between urban and rural communities, and one of the main causes of these gaps is the lack of dental facilities and practitioners<sup>21</sup>. The economic situation makes this worse as aspiring physician sometimes go for higher-paying jobs in cities, underserving rural communities<sup>22</sup>.

### 3.7 Lack of Oral Health Education

In Pakistan, there exists a widespread lack of understanding regarding the significance of oral health and preventive dental care practices. Many individuals are unaware of the correct methods for brushing and flossing, as well as the influence of diet on oral health<sup>23</sup>. Enhanced oral health education is necessary to encourage preventive habits and decrease the occurrence of dental issues<sup>24</sup>.

### 3.8 Water Fluoridation Issues

Although fluoride is advantageous in preventing dental cavities, maintaining appropriate levels of fluoride in drinking water poses challenges in Pakistan<sup>25</sup>. In certain regions, water fluoridation is either not practiced or implemented inconsistently, thereby contributing to an increased incidence of tooth decay<sup>26</sup>.

### 3.9 Inadequacies in dental infrastructure and equipment

Access to dental treatment is severely hampered for marginalized communities due to inadequate dental facilities and equipment, exorbitant pricing, and unequal access to care<sup>27</sup>. A study found that because of differences in access to care, marginalized and minority groups has a higher burden of dental disease than the general population. The study also discovered that structural, professional, and personal factors make it difficult to attract and retain dentists to treat underprivileged populations<sup>28</sup>.

## 4 Strategies to overcome the dental problem challenges

### 4.1 Strategies for Management

The dental issues in Pakistan necessitate a multidimensional strategy that includes professional advocacy, community involvement, and government intervention<sup>29</sup>. Key strategies include;

#### 4.1.1 Strengthening Oral Healthcare Infrastructure

It is needed to invest in dental clinics, tools, and educational initiatives to raise the standard and quantity of oral healthcare services.

#### 4.1.2 Promoting Oral Health Education

In order to alleviate inequities and enhance oral health outcomes, it is imperative that initiatives for oral health education be implemented. To encourage preventative measures and increase oral health awareness, these initiatives have to focus on schools, communities, and healthcare facilities. A cutting-edge framework called challenge-based learning (CBL) may be used to improve oral health instruction in dental courses by getting students to collaborate to find solutions to real-world problems<sup>30</sup>.

#### 4.1.3 Improving Access to Care

Access to treatment can also be enhanced via the creation of tele-dentistry services and mobile dental clinics, especially for underprivileged groups. Additionally, to increase underprivileged people's access to care, tele-dentistry services have been introduced in a number of venues, such as community health centres, nursing homes, and schools. Another good way to increase access to dental care is through outreach initiatives for marginalized communities. The care coordination program that links dentists to guarantee screening, prevention, and treatment for people with disabilities is needed<sup>31</sup>.

#### 4.1.4 Enhancing Regulatory Framework

Enhancing the regulatory framework to guarantee patient safety and accountability, developing outreach programs for marginalized

communities, and establishing mobile dental clinics and tele-dentistry services are some of the measures that may be used to improve access to dental treatment. The search results shed light on how successful these tactics are in various situations. Dental treatment is a tried-and-true, secure, superior, economical, and moral method to enhance oral health care accessibility<sup>32</sup>.

#### 4.1.5 Collaborative Efforts

The outcomes of the search offer valuable perspectives on the efficacy of collaborations among governmental bodies, non-governmental organizations, and private enterprises in diverse areas such as training for technical and vocational education, e-government advancement, digital service provision, and homeopathy services. The results can be generalized to comprehend the possible influence of cooperative efforts in the dental care industry<sup>31</sup>.

#### Conclusion

The dental issues in Pakistan are intricate and diverse, necessitating coordinated actions from different parties to lessen their effects. Pakistan may make progress in enhancing oral health outcomes and decreasing the prevalence of dental illnesses among its populace by putting into practice evidence-based initiatives centered on infrastructure development, education, and access to care.

#### References

- Niaz, M. O., Naseem, M., Siddiqui, S. N., & Khurshid, Z. (2013). An outline of the oral health challenges in "Pakistani" population and a discussion of approaches to these challenges. *JPDA*, 21(3).
- Petersen, P. E., Bourgeois, D., Ogawa, H., Estupinan-Day, S., & Ndiaye, C. (2005). The global burden of oral diseases and risks to oral health. *Bulletin of the world health organization*, 83, 661-669.
- Selwitz, R. H., Ismail, A. I., & Pitts, N. B. (2007). Dental caries. *The Lancet*, 369(9555), 51-59.
- Siddiqui, A.A., Alshammary, F., Mulla, M. et al. Prevalence of dental caries in Pakistan: a systematic review and meta-analysis. *BMC Oral Health* 21, 450 (2021).
- Petersen PE. Continuous improvement of oral health in the 21st century – the approach
- Pitts, N. B., Zero, D. T., Marsh, P. D., Ekstrand, K., Weintraub, J. A., Ramos-Gomez, F. ... & Ismail, A. (2017). Dental caries. *Nature reviews Disease primers*, 3(1), 1-16.
- Shivakumar, K. M., Vidya, S. K., & Chandu, G. N. (2009). Dental caries vaccine. *Indian journal of dental research: official publication of Indian Society for Dental Research*, 20(1), 99–106.
- Luo, H., & Wu, B. (2017). Self-awareness of "gum disease" among US adults. *Journal of Public Health Management and Practice*, 23(2), e1-e7.
- Iheozor-Ejiofor, Z., Middleton, P., Esposito, M., & Glenny, A. M. (2017). Treating periodontal disease for preventing adverse birth outcomes in pregnant women. *Cochrane Database of Systematic Reviews*, (6).
- National Institute of Dental Research (US). (1988). *Periodontal (Gum) Disease*. National Institute of Dental Research.
- El-Yousfi, S., Jones, K., White, S., & Marshman, Z. (2019). A rapid review of barriers to oral healthcare for vulnerable people. *British dental journal*, 227(2), 143-151.
- Bersell, C. H. (2017). Access to oral health care: a national crisis and call for reform. *American Dental Hygienists' Association*, 91(1), 6-14.
- Northridge, M. E., Kumar, A., & Kaur, R. (2020). Disparities in access to oral health care. *Annual review of public health*, 41, 513-535.
- Lawal, F. B., & Omara, M. (2023). Applicability of dental patient reported outcomes in low resource settings—a call to bridge the gap in clinical and community dentistry. *Journal of Evidence-Based Dental Practice*, 23(1), 101789.
- Kurji, Z., Premani, Z. S., & Mithani, Y. (2016). Analysis of the health care system of Pakistan: lessons learnt and way forward. *Journal of Ayub Medical College Abbottabad*, 28(3), 601.
- Thyath, M. N., Nishad, S. G., Sharma, M., & Zaidi, I. (2015). Impact of socioeconomic status and parental factors on child oral health—a review of literature. *Journal of Advanced Medical and Dental Sciences Research*, 3(2), 153.
- Piovesan, C., Antunes, J. L. F., Guedes, R. S., & Ardenghi, T. M. (2010). Impact of socioeconomic and clinical factors on child oral health-related quality of life (COHRQoL). *Quality of Life Research*, 19, 1359-1366.
- Guo, Y., Logan, H. L., Dodd, V. J., Muller, K. E., Marks, J. G., & Riley III, J. L. (2014). Health literacy: a pathway to better oral health. *American journal of public health*, 104(7), e85-e91.
- Hongal, S., Torwane, N. A., Goel, P., Chandrashekar, B. R., Jain, M., & Saxena, E. (2013). Assessing the oral health literacy: A review. *International Journal of Medicine & Public Health*, 3(4).
- Pack, A. R. (1998). Dental services and needs in developing countries. *International dental journal*, 48(S3), 239-247.
- Qazi, S. H., Mumtaz, R., & Sajjad, S. (2017). Service quality assessment at a public dental hospital Islamabad. *Pakistan Oral & Dental Journal*, 37(4), 604-607.
- Jaffry, T. N., Mirza, S., Farheen, S., & Khalid, S. (2017). Reluctance to serve in rural areas: doctors' perspective. *Pakistan Journal of Public Health*, 7(3).
- Gomes, A. P. M., da Silva, E. G., Gonçalves, S. H. F., Huhtala, M. F. R. L., Martinho, F. C., de Paiva Gonçalves, S. E., & Torres, C. R. G. (2015). Relationship between patient's education level and knowledge on oral health preventive measures. *International Dental & Medical Journal of Advanced Research*, 1(1), 1-7.
- Mouradian, W. E. (2001). The face of a child: children's oral health and dental education. *Journal of dental education*, 65(9), 821-831.
- McDonagh, M. S., Whiting, P. F., Wilson, P. M., Sutton, A. J., Chestnutt, I., Cooper, J. ... & Kleijnen, J. (2000). Systematic review of water fluoridation. *Bmj*, 321(7265), 855-859.
- Peckham, S., & Awofeso, N. (2014). Water fluoridation: a critical review of the physiological effects of ingested fluoride as a public health intervention. *The Scientific World Journal*, 2014.
- Smith, B. J., Ghezzi, E. M., Manz, M. C., & Markova, C. P. (2010). Oral healthcare access and adequacy in alternative long-term care facilities. *Special Care in Dentistry*, 30(3), 85-94.
- Plasschaert, A., Boyd, M., Andrieu, S., Basker, R., Beltran, R. J., Blasi, G. ... & Wolowski, A. (2002). 1.3 Development of professional competences. *European Journal of Dental Education*, 6, 33-44.
- Walker, M. P., Duley, S. I., Beach, M. M., Deem, L., Pileggi, R., Samet, N. ... & Williams, J. N. (2008). Dental education economics: challenges and innovative strategies. *Journal of dental education*, 72(12), 1440-1449.
- Nizami, M. Z. I., Xue, V. W., Wong, A. W. Y., Yu, O. Y., Yeung, C., & Chu, C. H. (2023). Challenge-Based Learning in Dental Education. *Dentistry journal*, 11(1), 14.
- Shah, M. A. (2008). Improving Oral Health in Pakistan Using Dental Hygienists.
- MacEntee, M. I., Kazanjian, A., Kozak, J. F., Hornby, K., Thorne, S., & Kettratad-Pruksapong, M. (2012). A scoping review and research synthesis on financing and regulating oral care in long-term care facilities. *Gerodontology*, 29(2), e41-e52.

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