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EPIDEMIOLOGY OF DENTAL DISEASES IN CENTRAL ASIA

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Abstract: This paper examines the prevalence of primary dental pathologies—specifically dental caries, periodontal diseases, and partial or complete tooth loss (edentulism)—among populations across the Central Asian region (Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan), synthesizing scientific evidence published over the past decade. Drawing on data from the World Health Organization's (WHO) 2022 Global Oral Health Status Report as well as regional cross-sectional studies, morbidity rates are evaluated in relation to age cohorts, socioeconomic determinants, and post-Soviet dietary transitions. The findings underscore the critical need to enhance dental epidemiological surveillance systems and scale up targeted preventive programs across the region.

Keywords: dental diseases, dental caries, periodontitis, gingivitis, edentulism, epidemiology, Central Asia, DMFT index, oral health.

Introduction

Oral diseases represent one of the most widespread groups of non-communicable diseases (NCDs) globally. According to the WHO's 2022 Global Oral Health Status Report, nearly half of the world's population—approximately 3.5 billion people—suffers from oral conditions, a prevalence that exceeds the aggregate burden of the next five leading NCDs combined.

Following independence, the Central Asian republics—Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan—underwent profound structural transformations across their socioeconomic frameworks and public health infrastructures. The phased departure from the Soviet-era model of centralized, universal pediatric dental care toward privatized delivery systems, coupled with surging per-capita refined sugar intake and persistent gaps in oral health literacy, has sustained high disease burdens. Furthermore, the absence of unified, standardized epidemiological registries across the region remains a widely recognized gap in the scientific literature.[1]

Results and Discussion

Empirical data consistently identify dental caries as the most prevalent oral pathology in Central Asia. In a large-scale cross-sectional investigation conducted in Kazakhstan, caries prevalence among 15-year-old adolescents reached 77.9%, compared to 68% documented in neighboring Uzbekistan. By comparison, rates were

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recorded at 91.8% in the Russian Federation and 86.2% in the Republic of Moldova, reflecting broader shared structural trajectories across post-Soviet territories.

According to WHO oral health surveillance metrics, the DMFT (Decayed, Missing, Filled Teeth) index among 12-year-olds in Kazakhstan stood at 4.0 (2015 data). This figure significantly exceeds rates reported in Russia (2.5) and China (0.9), and is many times higher than figures in high-income states such as the United Kingdom (0.5) and Sweden (0.7). Authors attribute this disparity to rapid westernization and concurrent dietary shifts toward ultra-processed carbohydrates and sugar-sweetened beverages.[2]

In the high-altitude Chon-Alai district (Osh Region) of Kyrgyzstan, an evaluation of 413 school-age children demonstrated markedly elevated caries rates, which researchers linked directly to geographic isolation, socioeconomic barriers, and restricted access to professional dental services. Analogous evaluations across distinct regions of Uzbekistan have detailed the local etiopathogenesis of caries across clinical stages (incipient/white spot, superficial, moderate, and deep) while evaluating the efficacy of community preventive interventions, including topical fluoridation protocols and oral hygiene education.[3]

Updated findings from the Global Burden of Disease (GBD 2021) study indicate that the global incidence rate of periodontitis has risen by 76.3% in recent years, displaying the fastest growth among major chronic NCDs. While nationwide, representative periodontal epidemiological surveys remain limited in Central Asia, focused clinical investigations reflect significant localized disease activity.[4]

Specifically, an observational study in Uzbekistan among patients with chronic liver pathology (hepatitis) identified chronic catarrhal gingivitis in 35.4% of subjects and generalized chronic periodontitis in 52.1%, confirming the direct pathophysiological bidirectional link between systemic morbidity and periodontal tissue degradation. These findings reinforce the necessity of integrated interdisciplinary management that bridges dental and general medicine.[5]

Data from Uzbekistan also demonstrate that approximately 70% of individuals aged 20–50 years exhibit dentition defects of varying severity, resulting in high prosthetic rehabilitation demands (estimated at 33% to 58%). Concurrently, secondary failure or patient abandonment of removable and fixed prostheses ranges between 20% and 56%, largely driven by deficiencies in clinical precision and prosthetic fabrication quality.[6]

This pattern mirrors macro-level global dynamics: GBD 2021 data demonstrate a 93.6% surge in incident edentulism worldwide. In regions with low-to-middle Socio-demographic Indices (SDI), including Central Asia, edentulism is projected to accelerate over coming decades, underscoring the urgent imperative to prioritize both preventive interventions and accessible, high-standard restorative care.[7]

Conclusion

This analysis demonstrates that oral diseases—most notably dental caries, periodontal breakdowns, and premature tooth loss—remain highly prevalent throughout Central Asia. These elevated morbidity patterns stem from systemic post-Soviet healthcare realignments, rapid nutritional transitions, and underdeveloped community hygiene behaviors. Addressing this public health challenge will require establishing unified, longitudinally updated epidemiological surveillance registries alongside robust public prevention frameworks throughout the region.

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