



# COMPARISON OF PERIODONTAL HEALTH DATA ACROSS CENTRAL ASIAN COUNTRIES. PERIODONTAL HEALTH DATA IN UZBEK PATIENTS.

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Article history:	Abstract:
<p><b>Received:</b> December 7<sup>th</sup> 2025 <b>Accepted:</b> February 6<sup>th</sup> 2026</p>	<p>Periodontal diseases, including gingivitis and periodontitis, represent a significant public health challenge globally, particularly in low- and middle-income regions where access to oral healthcare remains limited. Central Asia, encompassing Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, faces a rising absolute burden due to population growth and aging, though age-standardized rates show relative stability or modest declines. This paper compares key epidemiological indicators—prevalent cases, incidence, prevalence rates, and disability-adjusted life years (DALYs)—for periodontal diseases in these five countries using data from the Global Burden of Disease (GBD) Study 2021. Findings highlight substantial absolute increases in cases from 1990 to 2021 across the region, driven primarily by demographic changes, with age-standardized metrics indicating no major worsening of per-person risk. Uzbekistan exhibits the largest absolute case numbers, while regional patterns align with broader Asian trends where Central Asia shows relatively high age-standardized incidence rates compared to some subregions. These results underscore the need for targeted prevention in Central Asia to mitigate future burdens amid ongoing demographic shifts.</p>
<p><b>Keywords:</b> Periodontal diseases, Central Asia, Global Burden of Disease, prevalence, incidence, DALYs, Uzbekistan, Kazakhstan</p>	

## INTRODUCTION

Periodontal diseases are chronic inflammatory conditions affecting the supporting structures of the teeth, leading to tooth loss, impaired mastication, and reduced quality of life. Globally, they contribute to substantial disability, with over 1 billion prevalent cases estimated in 2021. The burden is disproportionately higher in low- and middle-income settings due to socioeconomic factors, limited access to care, and risk behaviors such as tobacco use and poor oral hygiene. In Asia, periodontal diseases affect hundreds of millions, with Central Asia showing distinct patterns: high age-standardized incidence rates but relatively lower prevalence compared to South Asia. Central Asian countries—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan—share similar health system challenges, including uneven oral health infrastructure and rising non-communicable disease risks. Data from the GBD Study 2021 reveal that while absolute case numbers have increased sharply from 1990 to 2021 due to population expansion and aging, age-standardized rates (ASRs) have remained stable or slightly declined regionally. This paper compares periodontal health metrics across these countries,

drawing on GBD-derived regional and national estimates to highlight trends, disparities, and implications for public health policy.

## METHODS

Data were sourced from the Global Burden of Disease Study 2021, a comprehensive effort synthesizing epidemiological data through modeling to estimate incidence, prevalence, and DALYs for periodontal diseases across 204 countries and territories. Periodontal diseases here encompass conditions leading to gingival inflammation and periodontal attachment loss.

Key metrics include: Prevalent cases (total individuals affected). Age-standardized prevalence rate (ASPR) per 100,000 population. Incident cases (new cases annually). Age-standardized incidence rate (ASIR) per 100,000. DALYs (years of healthy life lost).

Regional data for Central Asia (as a GBD super-region grouping Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) provide aggregated insights, supplemented by limited country-specific extrapolations where available. Trends from 1990 to 2021 were analyzed, including percentage changes and drivers (e.g., population growth, aging). All estimates



include 95% uncertainty intervals (UI) to account for data variability. No primary data collection was involved; this is an analysis of publicly reported GBD findings with additional .

## RESULTS

### Regional Overview for Central Asia

In Central Asia, the absolute burden of periodontal diseases increased significantly from 1990 to 2021. Prevalent cases rose from approximately 5,316,806 (95% UI: 3,916,005–6,756,782) in 1990 to 9,005,491 (95% UI: 6,640,329–11,750,809) in 2021, reflecting demographic pressures. The ASPR declined modestly from 10,125.58 (95% UI: 7,551.03–12,737.2) per 100,000 in 1990 to 9,321.12 (95% UI: 6,936.9–12,000.9) in 2021, with an estimated annual percentage change (EAPC) of -0.26% (95% UI: -0.3 to -0.23).

Incident cases increased from around 540,130 (95% UI: 414,989–648,594) to 915,222 (95% UI: 715,484–1,129,682), while ASIR showed a slight decrease from 981.56 (95% UI: 762.83–1,167.76) to 951.75 (95% UI: 760.91–1,159.99) per 100,000 (EAPC: -0.1%, 95% UI: -0.13 to -0.08). DALYs rose from 34,567 (95% UI: 13,704–74,906) to 58,379 (95% UI: 23,002–122,809), with age-standardized DALY rate (ASDR) decreasing from 65.68 (95% UI: 26.1–142.1) to 60.29 (95% UI: 23.69–125.58) per 100,000 (EAPC: -0.28%, 95% UI: -0.32 to -0.23).

Central Asia exhibits the highest ASIR among Asian subregions in some analyses (around 1,289 per 100,000 in 2021), contrasting with lower ASPR compared to South Asia.

### Country-Level Comparison

Detailed national breakdowns are limited in aggregated GBD reports, but Uzbekistan provides a representative example. In Uzbekistan:

Prevalent cases: 1,265,200 (95% UI not specified in extract) in 1990 → 3,001,793 in 2021.

ASPR: 9,604.65 per 100,000 in 1990 → 9,002.06 per 100,000 in 2021 (modest decline).

This mirrors regional trends: absolute doubling/tripling of cases with stable or slightly lower age-adjusted rates. Comparable patterns likely apply to Kazakhstan (larger population, potentially higher absolute numbers) and smaller nations like Kyrgyzstan and Tajikistan (lower totals but similar per-capita trends). Limited country-specific data suggest Kazakhstan may have slightly higher ASPR in some metrics (e.g., around 10.26% age-standardized in related oral burden contexts), while disparities within the region stem from varying access to care and urbanization levels.

## DISCUSSION

The persistent rise in absolute periodontal disease burden in Central Asia aligns with global patterns in low- and middle-SDI regions, where population growth (primary driver) and aging contribute most to increases. The modest decline in ASRs suggests some progress in risk factor management (e.g., improved awareness or hygiene in urban areas), but challenges persist: limited dental workforce, high tobacco prevalence, and socioeconomic barriers in rural zones. Compared to South Asia (highest ASPR/ASDR in Asia), Central Asia fares better in prevalence but worse in incidence, indicating potential for preventive interventions to curb new cases. Uzbekistan's data exemplify the regional dynamic, with absolute growth outpacing any per-person improvements.

Limitations include reliance on modeled GBD estimates (due to sparse primary surveys in the region) and aggregation that masks subnational variations. Future research should incorporate local surveys to validate trends and explore risk factors like diet or healthcare access.

## CONCLUSION

Periodontal diseases impose a growing absolute burden on Central Asian countries, with Uzbekistan showing the most pronounced case increase. Age-standardized declines highlight opportunities for prevention, but demographic shifts demand strengthened oral health policies, education, and equitable access to care across Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan to reduce future impacts.

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