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## **Global Burden and Inequalities of Major Oral Disorders Are Surging**

**Alexandria, VA, USA** – A study using a deep-learning algorithm to forecast the global, national, and local burden of caries of permanent teeth, periodontal diseases, and edentulism to 2040 was presented at the 103<sup>rd</sup> General Session of the IADR, which was held in conjunction with the IADR/Pan European Regional Congress on June 25-28, 2025 in Barcelona, Spain.

This study aimed to analyze the global, regional, national, and subnational burden of caries of permanent teeth (COP), periodontal diseases (PD), and edentulism from 1990 to 2021 and forecast burdens to 2040 using deep-learning algorithm. Data from the Global Burden of Disease (GBD) 2021 framework were used to estimate the burden of COP, PD, and edentulism across 953 locations, including 204 countries and 652 subnational units. Incidence and years lived with disability (YLDs) were calculated using the DisMod-MR 2.1 Bayesian meta-regression model. Slope index of inequality SII were employed to evaluate Inequality. Forecasts to 2040 were generated using iTransformer deep-learning algorithms.

In 2021, there were 2.37 billion new cases of COP, 89.6 million of PD, and 26.5 million of edentulism globally. Among 204 countries, the highest age-standardized incidence rate (ASIR) of COP, PD, and edentulism were observed in Cambodia, Sierra Leone, and Bolivia. Among subnational units, Michigan in the United States exhibited the highest ASIR of COP, while Maluku in the Indonesia and West Virginia in the United States had the highest ASIR of PD and edentulism, respectively. From 1990 to 2021, the ASIR of COP and PD both increased by 6%, while edentulism declined by 7%. From 1990 to 2021, the global SII for YLDs attributed to PD and edentulism increased by 262% and 47%, respectively, indicating widening inequalities. Forecasts to 2040 suggest PD and edentulism burdens will continue to rise, with global age-standardized YLDs reaching 87.8 and 115.9 per 100,000, respectively. COP decrease slightly by 2040.

This analysis underscores the increasing burden and inequalities of PD and edentulism globally. Preventive measures, improved access to dental care, and integration of oral health into public health frameworks are essential to mitigate these burdens and achieve equitable health outcomes.

The abstract, "Global Burden and Inequalities of Major Oral Disorders Are Surging" was presented by Xiayi Wu of the Sun Yat-sen University, China during the "Oral Health Inequalities" Poster Session that took place on June 28, 2025 at 11 a.m. CEST (UTC+2).

**About IADR**

The International Association for Dental, Oral, and Craniofacial Research (IADR) is a nonprofit organization with a mission to drive dental, oral, and craniofacial research for health and well-being worldwide. IADR represents the individual scientists, clinician-scientists, dental professionals, and students based in academic, government, non-profit, and private-sector institutions who share our mission. Learn more at [www.iadr.org](http://www.iadr.org).