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## **Big Data and AI in Dentistry: Progress and Challenges**

**Alexandria, VA** – A symposium investigating into the practical applications of big data and AI in dentistry was presented at the 54<sup>th</sup> Annual Meeting of the AADOOCR, which was held in conjunction with the 49<sup>th</sup> Annual Meeting of the Canadian Association for Dental Research, on March 12-15, 2025 in New York, NY.

Traditionally, dentistry has relied on smaller-scale studies and clinical experience, but with the advent of big data, there is now the potential to enhance decision-making, personalize treatment plans, and optimize overall healthcare outcomes. Big data refers to the vast amounts of structured and unstructured data generated from various sources, including electronic health records. Artificial Intelligence (AI) is also revolutionizing dental research by enabling more accurate and efficient analysis of complex datasets. Through machine learning algorithms, AI can analyze vast amounts of patient records, images, and other data to identify patterns, predict outcomes, and uncover new insights that would be difficult or time-consuming for humans to detect. However, the successful implementation of big data/AI initiatives requires careful attention to data quality, privacy, and other ethical considerations.

This symposium delved into the practical applications of big data and AI in dentistry. One presentation highlighted available big data resources for clinical dentistry, with a special focus on the BigMouth dental data repository. Another session showcased a clinical use case where big data, comprising millions of data points, was utilized to predict the likelihood of dental restoration failure. Additionally, a nationally recognized leader in AI fairness addressed the critical topics of ethics and patient privacy. Finally, the concluding speaker explored the future trajectory of big data in dentistry.

Organized by Bunmi Tokede of The University of Sydney, Australia, the symposium, “Big Data and AI in Dentistry: Progress and Challenges” took place on Thursday, March 13 at 1:30 p.m. Eastern Time (UTC-4).

### **About AADOOCR**

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