

## AI INTEGRATION INTO GLOBAL ENDODONTIC EPIDEMIOLOGY RESEARCH

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### **ABSTRACT**

*Global endodontic epidemiological research strives to understand the patterns of dental diseases, treatment outcomes, and risk factors across different populations. Yet, traditional epidemiological studies suffer from constraints arising due to limited datasets, discrepancies in the diagnostic criteria, and time-consuming data analysis. Such issues can be resolved through an AI integration into the field of endodontic epidemiology. In essence, AI algorithms allow the handling of large datasets sourced from numerous origins, tracing intricate patterns to formulate predictive models that expose trends in the prevalence of endodontic disease and factors affecting treatment success and risk elements. Through the employment of machine learning and deep learning methods, standardization is achieved in the analyses of data, thereby lessening observer bias and giving clearer insights on a population level. Additionally, AI supports real-time tracking of treatment outcomes worldwide and aids in forming evidence-based guidelines for per-region and demographic setups. Notwithstanding the potential of AI, it is important to weigh in matters of data quality, standardization, policies for ethical governance, and their application to cross-cultural sciences. In conclusion, therefore, applying AI into the systems of global endodontic epidemiology would restate research considerations towards keeping track of disease patterns, providing enhanced public health interventions, and making clinical and policy decisions on a worldwide scale.*

**KEYWORDS:** Artificial Intelligence, Endodontic Epidemiology, Global Dental Health, Predictive Modeling, Big Data Analytics, Treatment Outcomes, and Population-Level Risk Assessment

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