South American Publishing

SAP Artificial Intelligence in Dentistry. 2025; 1:12
doi: 10.62486/aid202512

BRIEF COMMUNICATION

Artificial Intelligence in Dentistry: Toward a New Architecture of Clinical Knowledge

Artificial Intelligence in Dentistry: Hacia una nueva arquitectura del saber clínico

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Cite as
García Contino T. Artificial Intelligence in Dentistry: Toward a New Architecture of Clinical Knowledge. SAP Artificial Intelligence in Dentistry. 2025; 1:12. https://doi.org/10.62486/aid202512

Publication History
Submitted: 12-03-2025
Revised: 21-05-2025
Accepted: 28-06-2025
Published: 29-06-2025

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ABSTRACT

Dentistry is undergoing a digital transformation marked by the integration of artificial intelligence. Since the foundational work in 1986, the growth of the field has been limited compared with that of other sectors. This paper presents SAP Artificial Intelligence in Dentistry, a publication aimed at systematizing knowledge, with a particular emphasis on the needs and realities of the Global South. A critical perspective regarding technological sovereignty, population diversity in data, and equity in health access is proposed. Similarly, the open access model and peer review are defined as pillars for responsible and grounded clinical practice.

Keywords: Artificial Intelligence; Dentistry; Global South; Open Access.

RESUMEN

La odontología atraviesa una transformación digital marcada por la integración de la inteligencia artificial. Desde los trabajos fundacionales de 1986, el crecimiento del área ha sido limitado en comparación con otros sectores. Este artículo presenta SAP Artificial Intelligence in Dentistry, una publicación orientada a sistematizar el conocimiento, con un énfasis particular en las necesidades y realidades del Sur Global. Se propone una perspectiva crítica respecto a la soberanía tecnológica, la diversidad poblacional en los datos y la equidad en el acceso a la salud. Asimismo, se defiende el modelo de acceso abierto y la revisión por pares como pilares para una práctica clínica responsable y fundamentada.

Palabras clave: Inteligencia Artificial; Odontología; Sur Global; Acceso Abierto.

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BACKGROUND

Dental practice is undergoing a period of profound transformation. What once fell within the realm of clinical intuition and analog experience is now shifting toward areas where algorithmic computation and big data processing are beginning to play a central role. The presentation of *SAP artificial intelligence in dentistry* responds not only to the need to systematize information but also to the urgency of providing a critical space for a discipline that, after decades of slow development, is claiming a central place in healthcare.

When looking at the trajectory of our profession, we must turn our gaze back to 1986. In that year, Ralls, Cohen and Southard,[1] from the pages of the *Dental Clinics of North America*, laid out the first coordinates of this digital cartography. That seminal text opened a crack in clinical orthodoxy, raising questions about how computing might alter the diagnosis and treatment of oral pathologies. From that starting point to the present, the accumulated literature amounts to barely 4,500 articles. Given the magnitude of the technological changes sweeping through contemporary societies, this figure reflects a significant disparity. There is a gap between the available technical capacity and its actual application in the dental office, between the promise of automation and the reality of daily practice. Our publication was created to bridge that gap.

DEVELOPMENT

The Imperative of the Global South: An Epistemic Geography

Science is often written from centers of power that do not always engage with peripheral realities. Artificial intelligence in dentistry risks becoming a tool designed for high-income contexts, with population databases that ignore the genetic, socioeconomic, and epidemiological diversity of our regions. *SAP Artificial Intelligence in Dentistry* proposes a break with this trend.

Equity in oral health requires recognizing that algorithmic solutions must be situated. Machine learning models trained exclusively on data from the Global North exhibit biases that, when applied in other regions, compromise diagnostic accuracy and therapeutic relevance.[2,3] Our approach focuses on the reality of the Global South, understanding that sustainable development and improvements in residents' quality of life are inseparable from equitable access to technology.

By centralizing research from diverse contexts, we seek to promote the preservation of sociocultural identity and local ways of life, as dictated by contemporary development frameworks. It is not merely a matter of importing models but of generating our own knowledge that accounts for the specific conditions of our health systems. Technological sovereignty begins with the capacity to produce evidence that reflects our own reality.

The Infrastructure of Knowledge: Transparency and Access

In the spirit of landmark publishing initiatives in the academic sphere, such as those promoted by research institutes within our faculty, this project is committed to open access. The free distribution of knowledge is a basic requirement for fostering a scientific community capable of transforming reality. The democratization of knowledge is the only way to ensure that artificial intelligence is not confined to a technological elite but becomes a public good.

Academic quality is guaranteed by an international scientific committee with a proven track record, which will subject each submission to peer review. This mechanism is not a mere administrative formality; it constitutes the necessary filter to ensure that contributions—whether original research articles, critical essays, or short communications—maintain the rigor demanded by the profession. Texts will be accepted in various languages to foster a global network that transcends language barriers and allows the voices of the Global South to reach a universal audience.

Challenges of Artificial Intelligence: Beyond Technical Enthusiasm

The field of artificial dental intelligence is not without its gray areas. The integration of these systems into the clinical workflow raises profound ethical and practical questions. Who is responsible when an algorithm makes a diagnostic error? How do we protect patient privacy in the face of a voracious appetite for clinical data? What happens to the professional's autonomy in the face of systems that seem to "decide" on their own?[3,4]

SAP Artificial Intelligence in Dentistry defines itself as a space for critical reflection. We do not seek to applaud every advance uncritically but rather to question its scope. The publication of preliminary results and clinical case studies is vital to understanding the limitations of current models. Transparency in algorithms, the interpretability of automated decisions, and the analysis of biases are key themes that guide our editorial line.

In the future, dentistry will inevitably be a hybrid practice. The interaction between human judgment, forged through years of clinical experience, and the processing capabilities of digital systems will be the new frontier.[5] Our journal serves as the platform for discussing, theorizing, and putting this relationship to the test. We invite the academic and professional community to participate, submit their work, challenge established paradigms, and contribute to the construction of a more equitable world, where technological advancement serves to bridge gaps rather than widen them.

A Call to Editorial Action

The invitation is extended to researchers, clinicians, bioengineers, and philosophers of science. Dentistry is not an isolated discipline; like other areas of medicine, it is intersected by knowledge from computer science, ethics, and sociology. The structure of our journal, with sections dedicated to reviews, argumentative essays, and educational contributions, seeks to reflect this complexity.

The topics addressed should go beyond the information found in traditional textbooks. We seek original contributions, hypotheses that challenge the status quo, and critiques that expose the shortcomings of current systems. Each issue of *SAP artificial intelligence*

in dentistry aims to serve as a navigational map in a sea of data, a meeting point for those who understand that the future of oral health is not something that arrives by inertia but rather something we must design with rigor and responsibility.

The history of AI in dentistry is just beginning. The 4,500 papers published to date represent only the prelude to an era of transformations we can barely glimpse. The responsibility of this new journal is to ensure that, in the coming decades, the development of this technology is marked by transparency, social justice, and unrestricted respect for human rights and patient dignity.

The call for contributions is ongoing. The channel for contact is open. The commitment to excellence and the democratization of knowledge are the pillars upon which this publication is built. A complex but necessary path lies ahead. Tomorrow's dentistry is being built today, with every line of code analyzed and every patient treated with the help of tools that, when well managed, have the potential to substantially improve our work.

The space is ready. The invitation is open to anyone who wishes to add their voice to this necessary conversation. Welcome to a new era in oral health research. Welcome to the era of critical thinking applied to technology. Welcome to *SAP Artificial Intelligence in Dentistry*.

FUNDING

None.

CONFLICT OF INTEREST

None.

AUTHORSHIP CONTRIBUTION

Conceptualization: Thalía García Contino.
Research: Thalía García Contino.
Writing – original draft: Thalía García Contino.
Writing – proofreading and editing: Thalía García Contino.

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