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Citation for final published version:

Nosrat, Ali, Nagendrababu, Venkateshbabu, Setzer, Frank C., Duncan, Henry F., Dummer, Paul M. H. , Mohammad-Rahimi, Hossein, Li, Jing and Pauwels, Ruben 2026. Announcing the development of guidelines for Preferred Reporting Items for Artificial Intelligence Studies in Endodontics (PAISE) [Editorial]. International Endodontic Journal 10.1111/iej.70261

Publishers page: <https://doi.org/10.1111/iej.70261>

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Announcing the development of guidelines for Preferred reporting items for Artificial Intelligence Studies in Endodontics (PAISE)

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Funding

The authors confirm that the study received no funding.

Conflict of interest

The authors confirm they have no conflict of interest

Artificial intelligence (AI) is changing the landscape of patient care, research and education in medicine and dentistry (1), including endodontics (2-5). AI can create systems that can emulate human pattern analysis and decision-making and thus be applied to several aspects of clinical practice such as patient screening, detection and diagnosis, treatment planning, outcome assessment, and outcome prediction (6-15). The introduction of AI to the field of dentistry and endodontics has created several opportunities for researchers to explore the potential of this new technology to improve patient care and educational practice. In endodontics, numerous gaps exist in knowledge relating to the involvement of AI in patient care (16). These gaps need to be addressed through robust well-designed studies where aims are clearly articulated, and methodology, results, and conclusions are aligned to address those objectives. A recent bibliometric analysis of the literature revealed a massive increase in the number of AI-related publications in the field of endodontics since 2020 (17). However, there are concerns about the real-world performance, ethics, generalizability and cost-effectiveness of this new technology (18, 19). Currently, there is an urgent need for clear guidelines on how best to report AI studies in the field of endodontics, as many shortcomings in the quality of manuscripts submitted to endodontic journals have been identified. These deficiencies have also increased the workload for editors and reviewers who oversee the assessment of those studies.

A common method to regulate, optimize, and standardize the processes of reporting research outcomes is to provide authors with guidelines on how best to describe details of the key steps of their research projects. These guidelines, which are generally presented in the form of checklists and flow diagrams, can also be used as a framework to design and execute research studies. In the past, an international group of experts developed a series of reporting guidelines for a range of study designs in endodontics under the Preferred Reporting Items for study Designs in Endodontology (PRIDE) initiative (20-25).

The authors of this editorial have comprised a Steering Committee and initiated a project to develop guidelines for Preferred reporting items for AI Studies in Endodontics (PAISE). This effort is focused on studies for developing machine learning (ML) and deep learning (DL) models to achieve a variety of clinical purposes (e.g., diagnosis, treatment planning, outcome determination/prediction, etc.) in the field of endodontics. This initiative does not include clinical studies involving AI tools where the development of the AI model itself was part of the study. It

also does not include studies on Large Language Models (LLM). Given the rapidly growing use of LLMs in healthcare, we recognize their importance; however, studies focused on LLMs are outside the scope of the current project because they involve distinct methodological and evaluation considerations that warrant dedicated reporting guidelines.

The process will follow the steps introduced for preparation of health research reporting guidelines (26) as well as steps taken for the preparation of the PRIDE guidelines:

- **Development of the draft PAISE checklist:** The Steering Committee will prepare the initial draft of the AI reporting checklist based on existing reporting guidelines and relevant literature. The process will also focus on incorporating items that are missing in existing reporting checklists.
- **Online Delphi process:** The Steering Committee will identify a group of international experts to participate in a Delphi consensus process. If necessary, multiple rounds will be conducted until consensus is achieved.
- **Online consensus meeting:** The Steering Committee will invite a group of experts to review and discuss the Delphi results, resolve outstanding issues, and agree on the final content of the checklist.
- **Finalize the checklist:** The steering group will incorporate the recommendations of the consensus meeting and prepare the final version of the AI reporting guideline checklist.
- **Publish the Consensus Statement/Explanation & Elaboration:** The consensus paper describing the methodology, Delphi process, consensus meeting outcomes, and the final AI reporting checklist for Endodontology will be published.

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