

Review Form 3

Journal Name:	Journal of Advances in Medicine and Medical Research
Manuscript Number:	Ms_JAMMR_127564
Title of the Manuscript:	SENSITIVITY EVALUATION OF DEEP LEARNING-BASED MODELS FOR DENTAL CARIES DETECTION IN BITEWING RADIOGRAPHS: SYSTEMATIC REVIEW AND META-ANALYSIS
Type of the Article	Systematic Review

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

<https://r1.reviewerhub.org/general-editorial-policy/>

Important Policies Regarding Peer Review

Peer review Comments Approval Policy: <https://r1.reviewerhub.org/peer-review-comments-approval-policy/>

Benefits for Reviewers: <https://r1.reviewerhub.org/benefits-for-reviewers>

Review Form 3

PART 1: Comments

	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<p>Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.</p>	<p>This manuscript is valuable for the scientific community as it evaluates the diagnostic potential of AI in detecting dental caries through systematic review and meta-analysis. It highlights AI's capabilities as a supplementary tool while identifying areas for improvement, contributing to advancements in dental diagnostics.</p>	
<p>Is the title of the article suitable? (If not please suggest an alternative title)</p>	<p>Yes.</p>	
<p>Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.</p>	<p>The abstract is generally comprehensive, covering the aim, methodology, results, and conclusion of the study. However, a few improvements could enhance its clarity and impact: Addition: Include specific values for sensitivity and specificity to provide a clearer understanding of the AI models' performance. Addition: Briefly mention the main sources of heterogeneity and their impact on the results. Deletion: Simplify generalized statements like "these models show promise" and replace them with concise, specific insights from the findings. These adjustments would make the abstract more precise and informative for readers.</p>	
<p>Is the manuscript scientifically, correct? Please write here.</p>	<p>Based on the provided content, the manuscript appears to be scientifically sound and follows a structured approach. The systematic review and meta-analysis methodology, including the use of PROSPERO registration, PICOT framework, and recognized tools like QUADAS-2, adds to its scientific rigor. The analysis of heterogeneity and statistical methods also seems appropriate for the study's objectives. However, a few points could be clarified or expanded for scientific accuracy: Heterogeneity: While significant heterogeneity is noted, a deeper exploration of its sources and mitigation strategies would strengthen the findings. Performance Metrics: The manuscript discusses AI performance relative to dentists but could better detail the clinical implications of its sensitivity and specificity. Bias Assessment: The risk of bias section is comprehensive, but ensuring consistent definitions and applications of bias criteria would improve transparency. Overall, the study's methodology and results are scientifically valid, but addressing these details would enhance the manuscript's robustness.</p>	
<p>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</p>	<p>The manuscript includes important and recent references regarding the use of artificial intelligence (AI) in dentistry. However, to reflect the latest developments in the field and strengthen the scientific foundation of the study, the following additions could be made: Applications of AI in Dentistry: Recent studies evaluating the effectiveness of AI in detecting dental caries should be included. For example: "Artificial Intelligence for Radiographic Imaging Detection of Caries: A Systematic Review" discusses the performance of AI models in detecting dental caries systematically. Albano, D., Galiano, V., Basile, M. et al. Artificial intelligence for radiographic imaging detection of caries lesions: a systematic review. BMC Oral Health 24, 274 (2024). https://doi.org/10.1186/s12903-024-04046-7 Standards for Reporting AI Studies: Guidelines developed to enhance transparency in reporting AI-based diagnostic studies should be added. For instance: Generalizability and External Validation of AI Models: Studies evaluating the validity of AI models across different populations and clinical settings should be referenced. For example: "Artificial Intelligence in Dental Caries Diagnosis and Detection: An Umbrella Review of Systematic Reviews" assesses the overall performance of AI models in caries detection and their validity in various contexts. Negi, S., Mathur, A., Tripathy, S., Mehta, V., Snigdha, N. T., Adil, A. H., & Karobari, M. I. (2024). Artificial Intelligence in Dental Caries Diagnosis and Detection: An Umbrella Review. Clinical and Experimental Dental Research, 10(4), e70004. https://doi.org/10.1002/cre2.70004</p>	

Review Form 3

<p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>Yes.</p>	
<p>Optional/General comments</p>	<p>Title and Abstract</p> <p>Strengths:</p> <ul style="list-style-type: none"> - The title accurately reflects the study's content and is engaging. - The abstract clearly summarizes the study's aim, methodology, and main findings. <p>Suggestions for Improvement:</p> <ul style="list-style-type: none"> - The abstract could include more details about the methodology and the impact of heterogeneity on the results. - Performance metrics like sensitivity and specificity should be highlighted separately to clarify the findings. <p>Introduction</p> <p>Strengths:</p> <ul style="list-style-type: none"> - The importance of artificial intelligence (AI) applications in dentistry is effectively highlighted, establishing the study's context. - The introduction identifies gaps in the literature and clearly defines the study's objective. <p>Suggestions for Improvement:</p> <ul style="list-style-type: none"> - Explain in greater detail why AI models are particularly suited for bitewing radiographs in dentistry. - Strengthen the literature review with recent and relevant examples. <p>Methods</p> <p>Strengths:</p> <ul style="list-style-type: none"> - The use of the PICOT framework enhances transparency. - The study is registered in PROSPERO, ensuring a solid methodological foundation. <p>Suggestions for Improvement:</p> <ul style="list-style-type: none"> - Provide more detailed descriptions of the search strategy and keywords. - Elaborate on the risk assessment tools (e.g., QUADAS-2), including any adaptations or signal questions used. <p>Results</p> <p>Strengths:</p> <ul style="list-style-type: none"> - Tables and figures are well-organized. - The performance of AI models and comparisons with human expertise are clearly presented. 	

Review Form 3

	<p>Suggestions for Improvement:</p> <ul style="list-style-type: none"> - Discuss the impact of heterogeneity (e.g., model architecture and training data) on the results in more detail. - Support sensitivity and specificity findings with appropriate visual aids, such as graphs. <p>Discussion</p> <p>Strengths:</p> <ul style="list-style-type: none"> - The limitations and potential of the models are addressed in a balanced manner. - The role of AI models as complementary tools is clearly explained while emphasizing human expertise. <p>Suggestions for Improvement</p> <ul style="list-style-type: none"> - Provide a more detailed evaluation of the impact of studies with high or unclear risk of bias. - Offer more specific recommendations for future research, such as the need for external validation. <p>Conclusion</p> <p>Strengths:</p> <ul style="list-style-type: none"> - The conclusion effectively conveys the potential of the models as complementary tools in clinical applications. - The necessity of human intervention is emphasized, offering a balanced perspective. <p>Suggestions for Improvement:</p> <ul style="list-style-type: none"> - Include a more detailed discussion of sensitivity and specificity metrics and their clinical implications. <p>Overall Assessment</p> <p>The manuscript provides valuable insights into AI-based caries detection. However, the methods and discussion sections could benefit from more detail and a methodological approach similar to the second manuscript reviewed. In summary:</p> <p>Strengths: The systematic review and meta-analysis are well-designed. The title and abstract effectively convey the study's main message.</p> <p>Weaknesses: Methodological clarity is somewhat limited due to missing details, and the findings require more in-depth discussion.</p>		
--	--	--	--

PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

Reviewer Details:

Name:	Ali Altindag
Department, University & Country	Necmettin Erbakan University, Turkiye