

REVIEWER'S REPORT

Manuscript No.: IJAR-56787

Title: The Diagnostic Gap in Acute Myocardial Infarction: A Systematic Review of Physician Accuracy in Interpreting ST-segment Elevation

Recommendation:

Accept as it is

✓ **Accept after minor revision.....**

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity		✓		
Significance	✓			

Reviewer Name: Dr S. K. Nath

Detailed Reviewer's Report

Strengths of the Study

- The study addresses a highly relevant clinical issue relating to diagnostic accuracy of physicians in identifying STEMI through ECG interpretation.
- The topic is timely given the increasing role of automated systems and AI in cardiac diagnostics.
- It employs a comprehensive systematic review and meta-analysis methodology, drawing data from multiple high-quality sources to synthesize existing evidence.
- The inclusion criteria, data extraction, and quality assessment (using QUADAS-2) are well-defined and rigorously applied.
- The results provide valuable benchmarks for sensitivity and specificity of physicians across different experience levels and specialties, enhancing understanding of current diagnostic performance.
- The discussion contextualizes findings within clinical practice and highlights potential avenues for improvement, such as AI integration and educational strategies.

Weaknesses of the Study

- The heterogeneity among included studies, in terms of reference standards, sample populations, and settings, might limit the generalizability of pooled estimates.
- Several included studies have moderate to high risk of bias, especially concerning patient selection and use of static ECG images rather than real-time interpretation.
- The sample size per individual study varies, and some involve pre-selected ECG libraries, possibly inflating performance metrics.
- The review does not explicitly address publication bias or provide a funnel plot for asymmetry assessment.
- Limited discussion around the ethical considerations of using AI and automated tools, especially concerning data privacy and clinician acceptance.
- Overall clarity could be improved, with some sections overly technical or lacking in concise interpretation for broader readership.
- No mention of whether ethical approval was necessary or obtained for the included studies, although it might not be applicable.

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Reviewer Comments

- The title accurately reflects the study focus but could be slightly more concise. For example, "A Systematic Review of Physician Accuracy in Interpreting ST Elevation in Myocardial Infarction" might be clearer.
- The abstract effectively summarizes the objectives, methods, key findings, and implications, but including explicit mention of heterogeneity and the limitations of pooled estimates would enhance transparency.
- The introduction is comprehensive, well-supported by references, and clearly states the clinical importance and gaps addressed. The objectives are well-defined.
- The methodology employs a thorough search strategy, clearly outlined inclusion/exclusion criteria, and appropriate quality assessment tools. The use of a random-effects model is appropriate given expected heterogeneity.
- The statistical analysis section is detailed, but addressing how heterogeneity was managed beyond I² statistics (e.g., meta-regression) would add depth.
- Results are clearly presented, with appropriate use of pooled estimates, subgroup analyses, and discussion of diagnostic performance variability. However, the presentation of heterogeneity statistics could be expanded.
- The discussion appropriately contextualizes findings, emphasizing that ECG interpretation remains imperfect and advocating for adjunct tools like AI. It also highlights educational needs.
- The conclusion appropriately summarizes key findings and implications but could be more concise.
- Ethical concerns are not explicitly discussed, but given that this is a review of existing studies, typically ethical approval is not required. Clarification on this point would be beneficial.
- The language is generally clear, though some sentences could be simplified for readability. Minor typographical and grammatical inconsistencies are minimal.
- Tables and figures are well-organized; however, including a funnel plot or other bias assessments could strengthen the review.
- The references are comprehensive and current, supporting all major statements.