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Editorial

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Bridging Machine Learning and Clinical Medicine in Septic Patient Care

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In the study "Early Prediction of Mortality for Septic Patients Visiting Emergency Room Based on Explainable Machine Learning: A Real-World Multicenter Study" by Park et al.,[1] a significant advancement is presented in predicting sepsis mortality using machine learning. This research not only showcases a method for efficient resource allocation in medical settings but also highlights the importance of explainable AI in clinical research. Employing six machine learning (ML) models and analyzing 44 clinical variables, the study serves as a benchmark for the integration of advanced technology and patient care in emergency medicine, with a special focus on the clarity and interpretability of machine learning results.

The integration of artificial intelligence (AI), including clinical decision support systems, in clinical medicine is swiftly transforming from a futuristic vision to a tangible reality. In journals such as *Journal of Korean Medical Science*, there has been a noticeable uptick in machine learning-based research, with 3-5 studies published annually since 2018, and nearly 20 in 2023.[2,3] This burgeoning trend necessitates a paradigm shift in how authors and editors approach scientific publication. It underscores the need for a deeper understanding and adaptation to machine learning methodologies, ensuring that research remains at the forefront of innovation while remaining accessible and comprehensible to a diverse readership.

While ML offers vast potential in clinical research, it is imperative to acknowledge and address its limitations. Firstly, the issue of causality in ML models presents a challenge, as correlational data can often be misconstrued as causal. Secondly, the reproducibility of ML studies is a critical concern, given the complex nature of algorithms and data dependencies. Finally, the opacity in methodology and database use can hinder the replicability and understanding of studies. These challenges necessitate a concerted effort in scientific communication and methodological transparency to maintain the integrity and utility of ML-based research.

Despite these challenges, the value of machine learning in clinical medicine is undeniable. It offers unprecedented opportunities for predictive analytics, personalized treatment, and resource optimization. However, to harness its full potential, it is essential for authors to

effectively communicate ML concepts in academic journals. The complexity of ML should not be a barrier to understanding; instead, supplementary materials, transparent data sharing, and thorough methodology explanations should be standard practice. This approach, as exemplified by Park et al.,[1] not only fosters a deeper understanding of ML among readers but also paves the way for ethical and effective application of AI in healthcare.

In conclusion, the study by Park et al.[1] is a commendable example of how machine learning can revolutionize clinical research and practice. It serves as a blueprint for future studies, emphasizing the need for explainability, transparency, and adaptability in the face of rapidly evolving AI technologies. As we stand on the brink of a new era in medicine, it is imperative that we embrace these changes with an informed and critical perspective, ensuring that the benefits of AI are realized to their fullest potential.

REFERENCES

1. Park SW, Yeo NY, Kang S, Ha T, Kim TH, Lee DH, et al. Early prediction of mortality for septic patients visiting emergency room based on explainable machine learning: a real-world multicenter study. *J Korean Med Sci* 2024;39(5):e53. CROSSREF
2. Cho Y, Park S, Hwang SH, Ko M, Lim DS, Yu CW, et al. Aortic annulus detection based on deep learning for transcatheter aortic valve replacement using cardiac computed tomography. *J Korean Med Sci* 2023;38(37):e306. PUBMED | CROSSREF
3. Chun JW, Kim HS. The present and future of artificial intelligence-based medical image in diabetes mellitus: focus on analytical methods and limitations of clinical use. *J Korean Med Sci* 2023;38(31):e253. PUBMED | CROSSREF