Artificial Intelligence in Medicine. Are we Ready for this Challenge? – A Literature Review

Adela Perolla[1*], Aurel Demiraj[2], Vilma Spada[3]

[1] Service of Hematology, Department of Internal Medicine, University of Medicine, Tirana, Albania
[2] University Hospital Centre "Mother Teresa" Department of Cardiology, Tirana, Albania
[3] Oracle Partners, Tirana, Albania

Abstract

Artificial Intelligence (AI) has emerged as a powerful tool in the field of medicine, offering opportunities to enhance healthcare delivery, improve patient outcomes, and optimize resource allocation. This review provides a comprehensive examination of the applications of AI in medicine, focusing on key areas such as diagnostic support, personalized treatment, drug discovery and development, healthcare management, and public health.

The review explores the benefits and limitations of AI in each area, discussing examples of AI-assisted diagnosis, image analysis, and predictive models for treatment outcomes. It also examines the role of AI in tailoring treatment plans to individual patients, utilizing algorithms to predict drug efficacy and adverse effects, and optimizing hospital operations and resource allocation. Additionally, the review explores the utilization of AI for predicting disease outbreaks, managing public health, and addressing healthcare disparities.

Challenges and considerations related to AI integration in medicine are discussed, including data quality and privacy concerns, algorithm bias, and the need for interpretability. Strategies are proposed to address these challenges, emphasizing the importance of data governance, ethical guidelines, and explainable AI. Furthermore, the review identifies key areas of research and collaboration needed for the responsible integration of AI, such as algorithmic

Address for correspondence: Adela Perolla*, Service of Hematology, Department of Internal Medicine, University of Medicine, Tirana. Rr. Dibres 372, Tirana, Albania. Email: adelaperolla19@gmail.com

fairness, human-AI collaboration, and longitudinal validation studies.

By highlighting the readiness challenges and providing recommendations, this review calls upon stakeholders in the healthcare industry to work together to ensure the responsible integration of AI in medicine. Collaboration among healthcare institutions, researchers, policymakers, and AI developers is essential to address the challenges, develop ethical guidelines, and drive advancements in AI technology. Ultimately, the integration of AI in medicine has the potential to revolutionize healthcare delivery, enhance clinical decision-making, and improve patient outcomes, paving the way for a more efficient and effective healthcare system.