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GLOBAL HEALTH REVOLUTION INNOVATING CARE: THE ROLE OF ARTIFICAL INTELLIGENCE FROM DIAGNOSIS TO DECISIONS

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ABSTRACT

Artificial intelligence (AI) is revolutionizing healthcare by enhancing diagnostics, treatment, and disease management, addressing global health challenges, and optimizing resources. During the COVID-19 pandemic, AI demonstrated its potential in predicting outbreaks, contact tracing, vaccine development, and combating misinformation. Machine learning (ML) and deep learning (DL) have improved diagnostic accuracy, exemplified by their success in identifying breast cancer, pneumonia, and appendicitis. AI also enhances treatment through precision medicine, therapeutic drug monitoring, and optimizing drug dosages. Tools like CURATE.AI personalize chemotherapy doses, showcasing AI's transformative impact on patient care. Despite its advantages, including improved diagnostics, cost efficiency, and workload reduction, AI faces challenges such as security risks, training requirements, and dependence on human oversight. Its integration into healthcare promises to bridge gaps in access to care, advance medical imaging, and streamline administrative tasks. While offering significant potential, AI must overcome social, ethical, and technical barriers to achieve widespread adoption. As researchers refine AI systems and explore their applications, AI is

poised to play an integral role in advancing equitable, efficient, and personalized healthcare globally.

KEYWORDS: Artificial Intelligence (AI), Machine Learning (ML), Deep Learning (DL), COVID-19, Precision Medicine, Sustainable Development Goals (SDGs).

INTRODUCTION

Artificial intelligence (AI), which combines computer science with vast datasets to mimic human intelligence, is piloting in a new era in medical history. The integration of AI with healthcare marks a transformative milestone, poised to revolutionize both medical practices and patient care. Since its inception in the mid-20th century, AI's journey in medicine has progressed from theoretical concepts to impactful, real-world applications, with machine learning (ML) and its advanced subset, deep learning (DL), playing pivotal roles.[1] Concerns have been raised about the potential impact of AI on doctor-patient communication and the preservation of clinical oversight. This commentary examines the current state and future potential of AI in addressing key global health challenges, as outlined in the United Nations Sustainable Development Goals (UN SDGs) introduced in 2012.[2]

Artificial Intelligence (AI) and COVID-19

The COVID-19 pandemic accelerated the growing influence of AI in society. While the pandemic heightened the focus on effectively communicating health-related information to the public, it also gave rise to a concurrent "misinfodemic" that undermined global vaccination efforts. AI can play a vital role in combating pseudoscientific misinformation. Machine learning techniques, for instance, can be employed to identify trends and leverage sentiment analysis on social media platforms to address misinformation effectively.[3]

Application of Artificial Intelligence in COVID-19 Disease Management [3]

- AI in Prediction & Tracking: AI has been used to predict the spread of COVID-19 and track its progression globally, helping authorities manage the pandemic. AI in Contact Tracing: AI-driven technologies assist in efficiently tracing contacts and identifying potential outbreaks, enabling timely interventions.
- AI in Monitoring COVID-19 Cases: AI tools have been instrumental in continuously monitoring COVID-19 cases, providing real-time insights into the status of the pandemic.AI in Early Diagnosis: AI systems support early detection of COVID-19 by analyzing medical data and imaging, helping to identify cases swiftly.

- AI in Reducing the Burden on Medical Practitioners & Healthcare Staff: By automating routine tasks and providing decision support, AI helps alleviate the strain on healthcare workers during the pandemic.
- AI in Protein Structure Prediction: AI technologies are used to predict protein structures, which is crucial for understanding the virus and developing treatments.
- AI in Development of Therapeutics: AI aids in discovering potential therapeutics by analyzing molecular data and predicting the effectiveness of drug candidates.
- AI in Development of Vaccines: AI accelerates the vaccine development process by analyzing data, identifying targets, and optimizing formulations.
- AI in Curbing the Spread of Misinformation: AI systems play a critical role in detecting and combating misinformation related to COVID-19, ensuring that accurate information is disseminated.
- AI in Genomics: AI is used to analyze genomic data, enabling better understanding of the virus's mutations and helping in the development of targeted therapies.

Implementation of AI models in healthcare

During the Global Summit 2023, panellists highlighted strategies for effectively implementing AI tools in sensitive sectors like healthcare to ensure a smooth adoption process.[4] To ensure the successful implementation of AI tools in healthcare, the following key recommendations were emphasized:

1. **Empathy for Users:** Developers should adopt the perspective of end-users to create tools that address their needs effectively.
2. **Collaboration with Doctors:** Close collaboration with healthcare professionals is essential to understand the practical use cases and adapt the model's functionality accordingly.
3. **Data Validation:** It is crucial to validate the training process and ensure the authenticity and reliability of the training data.
4. **Result-Oriented Development:** Initial development efforts should focus on achieving impactful and meaningful outcomes.
5. **Clear Study Objectives:** Developers must establish a clear purpose for their study and take responsibility for trusting the results generated by the AI model.
6. **Diverse Expertise:** A multidisciplinary team of experts should be involved in designing and refining the model.

7. **Human-Centric Design:** AI tools must prioritize the needs and well-being of people, ensuring ethical and beneficial outcomes.

The integration of Generative AI (GenAI) with Universal Health Coverage (UHC) presents an opportunity to enhance equitable access to healthcare while addressing critical challenges in the sector.[4]

AI assistance in diagnostics

Despite significant advancements in medicine, accurate disease diagnosis remains a global challenge. Developing early diagnostic tools continues to be difficult due to the complexity of disease mechanisms and their associated symptoms. AI has the potential to transform various aspects of healthcare, including diagnostics. Machine learning (ML), a branch of AI, relies on data as a key input, with its accuracy heavily influenced by both the quality and quantity of the data. By leveraging these capabilities, ML can help address the challenges and complexities associated with disease diagnosis.[5] AI is still in its nascent stages of being fully harnessed for medical diagnosis. However, growing evidence supports its application in diagnosing various diseases, including cancer. In a study conducted in the UK, researchers used a large dataset of mammograms to train an AI system for breast cancer diagnosis. The study revealed that the AI system reduced false positives by 5.7% and false negatives by 9.4%, demonstrating its potential to enhance diagnostic accuracy.[6] In summary, machine learning (ML) can support decision-making, streamline workflows, and automate tasks efficiently and cost-effectively. Additionally, deep learning enhances these capabilities by incorporating layers such as Convolutional Neural Networks (CNN) and data mining techniques, which are instrumental in detecting patterns within large datasets. These advanced tools are highly relevant in healthcare, where they play a crucial role in diagnosing, predicting, and classifying diseases.[7] A study conducted in South Korea compared the effectiveness of AI-based breast cancer diagnosis with that of radiologists. The findings revealed that AI demonstrated greater sensitivity in diagnosing breast cancer with masses, achieving a 90% detection rate compared to 78% for radiologists. Additionally, AI outperformed radiologists in detecting early-stage breast cancer, with a detection rate of 91% versus 74%.[8]

Moreover, deep learning algorithms have been used to detect pneumonia from chest radiographs, achieving a sensitivity of 96% and a specificity of 64%. In comparison, radiologists had a sensitivity of 50% and a specificity of 73%.[9]A study conducted on a

dataset of 625 cases aimed to diagnose acute appendicitis early and predict the need for appendix surgery using various machine learning techniques. The results indicated that the random forest algorithm performed the best, accurately predicting appendicitis in 83.75% of cases, with a precision of 84.11%, sensitivity of 81.08%, and specificity of 81.01%. This improved method supports healthcare professionals in making more informed decisions regarding appendicitis diagnosis and treatment.[10] AI tools have the potential to enhance diagnostic accuracy, cut costs, and save time compared to conventional methods. They can also reduce the likelihood of human errors, delivering more precise results more quickly. In the future, AI could assist in medical decision-making by offering real-time support and insights to clinicians. Researchers are continuously investigating how AI can be applied to medical diagnosis and treatment, including the analysis of medical images such as X-rays, CT scans, and MRIs. By utilizing machine learning techniques, AI can help identify abnormalities, detect fractures, tumours, and other conditions, while providing quantitative measurements for faster and more accurate diagnoses.[11]

Machine learning research in medicine has grown rapidly, offering significant potential to assist healthcare providers in the emergency department (ED). EDs face numerous challenges, including the growing burden of diseases, increased demand for time and healthcare services, higher societal expectations, and rising healthcare costs.**[12]**AI algorithms can analyze patient data to aid in triaging, prioritizing high-risk cases based on urgency. This helps reduce waiting times and enhances patient flow.**[13]** Diagnostic errors in healthcare can be both costly and life-threatening. A study found that these errors, especially among patients in the emergency department (ED), are directly linked to higher mortality rates and longer hospital stays.**[14]** AI can aid in the early detection of life-threatening diseases by promptly alerting clinicians, ensuring that patients receive immediate attention. Additionally, AI can optimize healthcare resources in the emergency department (ED) by predicting patient demand, enhancing therapy selection (including medication, dosage, administration route, and intervention urgency), and estimating the length of stay. By analyzing patient-specific data, AI systems can provide valuable insights to improve therapy choices, increase efficiency, and help reduce overcrowding in the ED. [11]

AI assistance in treatment

Precision medicine and clinical decision support

Personalized treatment, or precision medicine, is an approach that customizes healthcare for each patient based on their unique characteristics, including genetics, environment, lifestyle, and biomarkers. This groundbreaking field highlights the potential to revolutionize medical care by providing tailored treatments that cater to individual needs.**[15]** Personalized treatment is a groundbreaking field that showcases the large-scale potential of precision medicine.**[16]** This individualized approach seeks to enhance patient outcomes by delivering targeted interventions that are more effective, efficient, and safe. AI has become a valuable asset in advancing personalized treatment, with the ability to analyze complex datasets, predict outcomes, and optimize treatment plans.[17] In this study, the authors included 175 cancer patients and utilized their gene-expression profiles to predict responses to various standard chemotherapy treatments. Remarkably, the research achieved a prediction accuracy of over 80% for multiple drugs, highlighting the potential of AI in predicting treatment responses. In a separate study by Sheu et al., the authors sought to predict responses to different classes of antidepressants by analyzing the electronic health records (EHR) of 17,556 patients using AI.**[18]** A study by Huang et al. involved using patients' gene expression data to train a support machine learning model, which successfully predicted responses to chemotherapy.**[19]** The study showed that antidepressant responses could be accurately predicted using real-world electronic health record (EHR) data combined with AI modeling, indicating the potential for creating clinical decision support systems to guide more effective treatment choices. Although significant progress has been made in using AI and genomics to predict treatment outcomes, further prospective and retrospective clinical research is crucial to advance these approaches.[20] The AI models took into account factors that predict treatment selection, helping to minimize confounding variables, and demonstrated strong predictive performance. These efforts are essential for generating the comprehensive data needed to train algorithms effectively, ensuring their reliability in real-world applications, and advancing the development of AI-driven clinical decision-making tools.[11]

Dose optimization and therapeutic drug monitoring

AI is essential in optimizing drug dosages and predicting adverse drug events, providing valuable benefits in improving patient safety and treatment outcomes.[21] By utilizing AI algorithms, healthcare providers can tailor medication dosages to individual patients and predict potential adverse drug events, thereby minimizing risks and enhancing patient care.

One study focused on developing an AI-based prediction model for prothrombin time international normalized ratio (PT/INR) and a decision support system to optimize warfarin maintenance doses.[22]In contrast, CURATE.AI is an innovative AI-driven platform designed to dynamically optimize chemotherapy doses based on each patient's individual data.[23]A study was conducted to validate this system through an open-label, prospective trial involving patients with advanced solid tumors who were treated with three different chemotherapy regimens. CURATE.AI generated personalized doses for subsequent cycles by analyzing the relationship between chemotherapy dose adjustments and tumor marker readouts. Integrating CURATE. AI into the clinical workflow demonstrated successful implementation and potential benefits, including reduced chemotherapy doses and improved patient response rates and durations compared to the standard treatment approach.[23]

Therapeutic drug monitoring (TDM) is a process designed to optimize drug dosing for individual patients. It is primarily used for drugs with a narrow therapeutic index to prevent both underdosing, which may lead to inadequate treatment, and overdosing, which can cause toxicity. The goal of TDM is to ensure that patients receive the correct drug at the appropriate dose and time to achieve the desired therapeutic effect while minimizing the risk of adverse effects.[24] An example of AI in therapeutic drug monitoring (TDM) is the use of machine learning (ML) algorithms to predict drug-drug interactions. By analyzing extensive patient data, these algorithms can detect potential drug interactions, helping to reduce the risk of adverse drug reactions, lower costs, and improve patient outcomes.[25] Another application of AI in therapeutic drug monitoring (TDM) involves using predictive analytics to identify patients at high risk of adverse drug reactions. By analyzing patient data and recognizing potential risk factors, healthcare providers can take proactive measures to prevent these adverse events before they happen.[26]

Pros and cons of AI in healthcare

To gain a better understanding of AI's role in healthcare, it is important to familiarize yourself with its advantages and disadvantages in the field.

Advantages of AI in Healthcare[27]

1. Improved Data Analysis and Diagnosis

AI technology can analyze medical records and healthcare data much faster and often more accurately than humans, helping medical professionals reach diagnoses more quickly and effectively.

2. Enhanced Patient Care

Integrating AI into clinician workflows provides healthcare professionals with valuable context when making important treatment decisions, leading to better patient care.

3. Cost Reduction

AI can help reduce costs both financially and in terms of time. Machine learning can ease administrative burdens, reduce medical errors, and complete tasks much faster than humans, lowering overall healthcare costs.

4. Real-Time, Accurate Data

AI provides real-time, accurate data that allows medical professionals to make critical decisions quickly. This helps reduce costs, minimize waiting times, and improve the chances of preventing conditions from worsening.

5. Reduced Workload and Staff Stress

Healthcare roles can be highly stressful, especially in understaffed departments. AI can ease this burden by taking on some tasks, improving staff efficiency, and supporting staff well-being, which also positively impacts the quality of patient care.

6. Support with Administrative Tasks

AI can handle time-consuming administrative tasks like maintaining records, scan analysis, and data entry, enabling medical professionals to focus more on patient care.

7. Health Monitoring and Digital Consultations

AI improves healthcare through wearable technologies that monitor patient health and digital consultations via smart devices. This allows for better data analysis and enables patients to track their health and receive expert support remotely.

Disadvantages of AI in Healthcare[27]

1. Training Challenges

Medical professionals and AI systems both require extensive training, which can lead to complications and delays in implementation.

2. Risk of Unemployment

AI and automation could replace administrative jobs in healthcare, leading to potential job losses.

3. Difficulty Managing Change

Excessive change can be disruptive, especially in healthcare, where AI must be thoroughly tested and integrated into workflows to ensure patient safety.

4. Dependence on Human Input

AI still requires human oversight, as machines cannot replace human empathy and behavioural observations that are crucial for diagnoses.

5. Increased Security Risks

AI systems are vulnerable to cyber-attacks, and protecting sensitive patient data requires significant investment in security measures.

6. Social Factors Not Considered

AI may overlook social, economic, and historical factors that influence a patient's care, which human professionals can consider when making decisions.

7. Potential Inaccuracies

While AI can reduce human error, inaccuracies and data gaps can still occur, leading to risks, especially in areas like medication prescriptions.

Applications of AI in Healthcare[27]

Artificial intelligence is already being successfully used in various healthcare applications, and there are numerous opportunities for its future impact. Here, we explore some of the ways AI could positively influence the healthcare industry.

1. Illness Detection and Diagnosis

Machine learning can help detect complex conditions that might not be immediately obvious during a diagnosis and monitor patients for worsening conditions. AI can collect critical data and alert healthcare providers when necessary.

2. Medical Imaging

AI is already applied in medical imaging, with studies suggesting it can detect diseases like cancer as effectively as human radiologists. AI allows for faster, more thorough examination of medical images, reducing the risk of human error and improving early detection.

3. Drug Creation and Development

AI can accelerate drug development by analyzing existing medicines and data. This can reduce the time and cost of discovering new drugs and help identify promising candidates much more efficiently.

4. Managing Medical Records

AI plays a key role in collecting and analyzing medical data, such as patient records. This enhances the efficiency of healthcare providers, enabling them to focus on more critical tasks while working more effectively.

5. Improving Access to Care

In regions with staff shortages, particularly in developing countries, AI can help bridge the gap. It can ensure life-saving care is accessible by assisting with diagnosis and filling skill shortages in healthcare systems.

6. Monitoring Health with Wearables and Personal Devices

Wearable devices and smart technology are already used for patient monitoring and digital consultations. The use of these tools is expected to grow, enabling healthcare professionals to intervene early and provide timely care when problems are detected.

REFERENCES

1. Zuhair V, Babar A, Ali R, Oduoye MO, Noor Z, Chris K, Okon II, Rehman LU. Exploring the Impact of Artificial Intelligence on Global Health and Enhancing Healthcare in Developing Nations. J Prim Care Community Health., 2024 Jan-Dec; 15: 21501319241245847. doi: 10.1177/21501319241245847. PMID: 38605668; PMCID: PMC11010755.
2. Alhussain G, Kelly A, O'Flaherty EI, Quinn DP, Flaherty GT. Emerging role of artificial intelligence in global health care. Health Policy Technol., 2022 Sep; 11(3): 100661. doi: 10.1016/j.hlpt.2022.100661. Epub 2022 Aug 13. PMID: 35991006; PMCID: PMC9374598.
3. Arora N., Banerjee A., Narasu M. The role of artificial intelligence in tackling COVID-19. Future Virol., 2020; 15(11): 717–724. [Google Scholar][Ref list]
4. GPAI Summit 2023 - AI and Global health- Role of AI in advancing healthcare https://indiaai.gov.in/article/ai-and-global-health-role-of-ai-in-advancing-healthcare

5. Myszczynska MA, Ojamies PN, Lacoste AM, Neil D, Saffari A, Mead R, et al. Applications of machine learning to diagnosis and treatment of neurodegenerative Diseases. Nat Reviews Neurol., 2020; 16(8): 440–56. https://doi.org/10.1038/s41582-020-0377-8.
6. McKinney SM, Sieniek M, Godbole V, Godwin J, Antropova N, Ashrafian H, et al. International evaluation of an AI system for breast cancer screening. Nature., 2020; 577(7788): 89–94. https://doi.org/10.1038/s41586-019-1799-6.
7. Ahsan MM, Luna SA, Siddique Z. Machine-learning-based disease diagnosis: a comprehensive review. Healthcare., 2022; 10(3): 541. https://doi.org/10.3390/healthcare10030541.
8. Kim H-E, Kim HH, Han B-K, Kim KH, Han K, Nam H, et al. Changes in cancer detection and false-positive recall in mammography using Artificial Intelligence: a retrospective, Multireader Study. Lancet Digit Health., 2020; 2(3). https://doi.org/10.1016/s2589-7500(20)30003-0.
9. Becker J, Decker JA, Römmele C, Kahn M, Messmann H, Wehler M, et al. Artificial intelligence-based detection of pneumonia in chest radiographs. Diagnostics., 2022; 12(6): 1465. https://doi.org/10.3390/diagnostics12061465.
10. Mijwil MM, Aggarwal K. A diagnostic testing for people with appendicitis using machine learning techniques. Multimed Tools Appl., 2022; 81(5): 7011–23. https://doi.org/10.1007/s11042-022-11939-8.
11. Alowais, S.A., Alghamdi, S.S., Alsuhebany, N. et al. Revolutionizing healthcare: the role of artificial intelligence in clinical practice. BMC Med Educ., 2023; 23: 689. https://doi.org/10.1186/s12909-023-04698-z
12. Panch T, Szolovits P, Atun R. Artificial Intelligence, Machine Learning and Health Systems. J Global Health., 2018; 8(2). https://doi.org/10.7189/jogh.08.020303.
13. Gandhi SO, Sabik L. Emergency department visit classification using the NYU algorithm. Am J Manag Care, 2014; 20(4): 315–20.
14. Hautz WE, Kämmer JE, Hautz SC, Sauter TC, Zwaan L, Exadaktylos AK, et al. Diagnostic error increases mortality and length of hospital stay in patients presenting through the emergency room. Scand J Trauma Resusc Emerg Med., 2019; 27(1): 54. https://doi.org/10.1186/s13049-019-0629-z.
15. Quazi S. Artificial intelligence and machine learning in precision and genomic medicine. Med Oncol., 2022; 39(2): 120. https://doi.org/10.1007/s12032-022-01711-1.

16. Johnson KB, Wei WQ, Weeraratne D, Frisse ME, Misulis K, Rhee K, et al. Precision Medicine, AI, and the future of Personalized Health Care. Clin Transl Sci., 2021; 14(1): 86–93. https://doi.org/10.1111/cts.12884.
17. Subramanian M, Wojtusciszyn A, Favre L, Boughorbel S, Shan J, Letaief KB, et al. Precision medicine in the era of artificial intelligence: implications in chronic disease management. J Transl Med., 2020; 18(1): 472. https://doi.org/10.1186/s12967-020-02658-5.
18. Sheu YH, Magdamo C, Miller M, Das S, Blacker D, Smoller JW. AI-assisted prediction of differential response to antidepressant classes using electronic health records. npj Digit Med., 2023; 6: 73. https://doi.org/10.1038/s41746-023-00817-8.
19. Huang C, Clayton EA, Matyunina LV, McDonald LD, Benigno BB, Vannberg F, et al. Machine learning predicts individual cancer patient responses to therapeutic drugs with high accuracy. Sci Rep., 2018; 8(1): 16444. https://doi.org/10.1038/s41598-018-34753-5.
20. Pulley JM, Denny JC, Peterson JF, Bernard GR, Vnencak-Jones CL, Ramirez AH, et al. Operational implementation of prospective genotyping for personalized medicine: the design of the Vanderbilt PREDICT project. Clin Pharmacol Ther., 2012; 92(1): 87–95.
21. Martin GL, Jouganous J, Savidan R, Bellec A, Goehrs C, Benkebil M, et al. Validation of Artificial Intelligence to support the automatic coding of patient adverse drug reaction reports, using Nationwide Pharmacovigilance Data. Drug Saf., 2022; 45(5): 535–48. https://doi.org/10.1007/s40264-022-01153-8.
22. Lee H, Kim HJ, Chang HW, Kim DJ, Mo J, Kim JE. Development of a system to support warfarin dose decisions using deep neural networks. Sci Rep., 2021; 11(1): 14745. Published 2021 Jul 20. https://doi.org/10.1038/s41598-021-94305-2.
23. Blasiak A, Truong A, Jeit W, Tan L, Kumar KS, Tan SB, et al. PRECISE CURATE.AI: a prospective feasibility trial to dynamically modulate personalized chemotherapy dose with artificial intelligence. J Clin Oncol., 2022; 40(16suppl): 1574–4. https://doi.org/10.1200/JCO.2022.40.16_suppl.1574.
24. Sjövall F, Lanckohr C, Bracht H. What's new in therapeutic drug monitoring of antimicrobials? Intensive care Med. 2023 May 3. https://doi.org/10.1007/s00134-023-07060-5.
25. Han K, Cao P, Wang Y, Xie F, Ma J, Yu M, Wang J, Xu Y, Zhang Y, Wan J. A review of approaches for Predicting Drug-Drug interactions based on machine learning. Front Pharmacol., 2022; 12: 814858. https://doi.org/10.3389/fphar.2021.814858.

26. 26.Liu JYH, Rudd JA. Predicting drug adverse effects using a new Gastro-Intestinal Pacemaker Activity Drug Database (GIPADD). Sci Rep., 2023; 13(1): 6935. https://doi.org/10.1038/s41598-023-33655-5.
27. What is AI in healthcare? Published on May 2nd, 2023 FutureLearn https://www.futurelearn.com/info/blog/what-is-ai-in-healthcare