

CAPCDR 7th Conference

Paper Presentation

Artificial Intelligence Role in Healthcare: For Public Health Prospective

Pooja Sudamrao Munjal

M-Pharm 2nd Year

PES Modern College of

Pharmacy(For Ladies) Moshi, Pune.

INTRODUCTION

Artificial Intelligence (AI):

Artificial Intelligence (AI) is a branch of computer science that deals with automating intelligent behaviours. It needs to be grounded in the use of suitable models and theoretical principles.

There are other hazards and difficulties that come with it, including as the possibility of patient harm from system malfunctions, the risk to patient privacy when gathering data and making inferences from AI, and more. AI preventative care can help people stay healthy, which is vital for public health.

These methods can be used in many domains, including health and medicine, and they use an interdisciplinary approach. AI has been used in medicine since the 1950s, when doctors started experimenting with computer-aided programmes to help them diagnose patients more accurately.

- Healthcare systems around the world are facing substantial obstacles in meeting the 'quadruple objective' for healthcare: improving population health, improving patient experience of care, improving carer experience, and lowering escalating healthcare costs.
- The AI industry in the US was estimated to be worth \$600 million in 2014, making it one of the fastest-growing in the world.
- Artificial intelligence is widely employed in healthcare facilities across the globe today because it has made patients' and physicians' life easier by completing complicated tasks. Important jobs completed at a fraction of the cost and in less time.
- As a result, AI is wide range of uses in the healthcare sector. From identifying genetic code connections to controlling surgical robots, AI is truly revolutionising and advancing the field. AI is progressively transforming medicine. Numerous AI applications in medicine are applicable to a range of medical specialties, including clinical, diagnostic, surgical, rehabilitative, and predictive techniques.

Five things to consider regarding AI's potential impact on healthcare:

- Firstly, AI is anticipated to replace rote tasks currently performed by people, such as billing, appointment scheduling, and facilities management.
- AI in this domain might save between \$200 billion and \$360 billion per year, with administrative savings accounting for around 35% of the total.
- Secondly, AI is more likely to support physicians in clinical treatment than to replace them. While administrative jobs are often carried out in a different manner than clinical care, AI can be helpful in certain situations, such as reviewing test findings for anomalies.
- Third, Developing AI solutions that improve productivity by enabling less expensive monitoring, diagnosis, and staffing requirements is very crucial.
- Hospitals and post-acute care centres provide the most costly medical treatment.

- Fourth, AI systems ought to strive to outperform human thought processes rather than merely mimicking them.
- Humans are prone to making bad or biased decisions; some are random, while others systematically harm people from lower socioeconomic backgrounds, less educated backgrounds, and racial and ethnic minorities' minority ethnic groups.
- It is insufficient to create algorithms and software programmes that mimic bias and errors made by people.

- Fifth, it's critical to understand what AI is not proficient in. Finding patterns in data can be greatly aided by machine learning.
- It can find subgroups with treatment effects that are greater than average by scanning the outputs of clinical trials.

- **Types of AI relevant to healthcare**
- Artificial intelligence is a collection of technologies, not a single one. The majority of these technologies are immediately applicable to the healthcare industry, although the precise operations and tasks they support differ greatly.
- **Deep learning and neural networks are two types of machine learning:**
- Machine learning is a statistical technique for fitting models to data and teaching models to learn' by training them with data. Machine learning is one of the most widespread types of AI, 63% of organisations assessed in a 2018 Deloitte survey of 1,100 US managers whose organisations were already exploring AI used machine learning in their operations.

- **Natural Language Processing (NLP)**
- Since the 1950s, AI researchers have sought to understand human language. NLP applications are included in this field such as speech recognition, text analysis, translation, and other linguistic tasks. There are two approaches statistical NLP and semantic NLP.
- **Rules based on expert system**
- In the 1980s, expert systems based on collections of 'if-then' rules were the leading AI technology and were widely employed commercially at the time and later They were widely used in healthcare for 'clinical decision support purposes over the last several decades and are still widely used today. Many electronic health record (EHR) providers now include a set of guidelines with their system.

- **Physical Robots**

- Physical robots are well known at this time, with over 200,000 industrial robots installed worldwide each year world. They carry out predetermined duties such as lifting, relocating, welding, or assembling goods in areas such as factories and warehouses, as well as transporting supplies in hospitals.
- Recently become more collaborative with people and are more easily trained by guiding them through a desired job They are also becoming smarter as other AI capabilities are integrated into their brains' (actually their operating systems).

- **Healthcare Data**

- The vast majority of data generated from health related activities, including diagnosis, therapy assignment, and other activities, is used to train artificial intelligence algorithms. Gaining knowledge from a huge dataset will allow the algorithm to identify associations between subject qualities and interest related outcomes, as well as similar groups of items.
- AI systems must assess a significant amount of data from genetic testing and diagnostic imaging during the diagnosis stage.
- Researcher Ispel and Jha, for instance, recommended radiologists to use.

- **AI prospects in healthcare**

- We think artificial intelligence (AI) will play a significant part in future healthcare products, It takes the shape of machine learning the main factor driving the development of precision medicine, which is generally acknowledged as a desperately needed improvement in healthcare.
- Even though early attempts to provide diagnosis and treatment recommendations have been difficult, we anticipate that AI will eventually become proficient in that area as well A computer will probably analyse the majority of radiology and pathology images at some time, given the speed at which AI for imaging analysis is developing.

- **Applications Artificial Intelligence in healthcare**

1. It is widely accepted that AI tools will support and improve human labour rather than completely replace that of doctors and other healthcare professionals.
2. AI is prepared to assist healthcare workers with a range of duties, including clinical documentation, patient outreach, administrative processing, and specialised help in areas like image analysis, patient monitoring, and medical device automation.
3. Divergent views exist regarding the best uses of AI in the healthcare industry. According to a 2018 Forbes article, clinical decision support, robotic surgery, image analysis, administrative procedures, and virtual assistants would be the most crucial sectors.
4. The same topics were included in a 2018 Accenture paper along with connected machines, cyber security, and dose error reduction [34] According to a McKinsey analysis from 2019.

References

- T. Le Nguyen and T. T. H. Do, "Artificial Intelligence in Healthcare: A New Technology Benefit for Both Patients and Doctors," 2019 Portland International Conference on Management of Engineering and Technology (PICMET), Portland, OR, USA, 2019, pp. 1-15, doi: 10.23919/PICMET.2019.8893884.
- S. Hamid The opportunities and risks of artificial intelligence in medicine and healthcare(2016)
- M. Coeckelbergh Health care, capabilities, and AI assistive technologies Ethical Theory Moral Pract, 13 (2010), pp. 181-190.
- Lee SL. Celik S, Logsdon BA et al. A machine learning approach to integrate big data for precision medicine in acute myeloid leukemia. Nat Commun 2018 9:42
- 26 Vial A Stirling D. Field M et al The role of deep learning and radiomic feature extraction in cancer-specific predictive modelling a review Transl Cancer Res 2018, 7:803-16

THANKU YOU..!!!