

Emerging role of artificial intelligence in medical sciences—Are we ready!

Artificial intelligence (AI) is an emerging newer technology that has found its real-time utility. It is also being used in medical practice and its role has been advocated for the present coronavirus disease 2019 (COVID-19) pandemic. This digital technology is being used for screening, tracking, early detection, evaluating, and predicting the prognosis of patients.^[1] The AI-based technology is also being used for the development of vaccines and serving as a warrior itself in the fight against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

This issue of the journal publishes a manuscript that highlights the importance of AI in various domains of COVID-19 management and its future beneficial role in teaching, training, and clinical practice.^[2] It appears the various strategies to combat COVID-19 have allowed clinicians, scientists, and researchers to think out of the box and to develop a safe effective modality for present pandemic management. Among the many downs seen in the COVID-19 era, many learning positive aspects are emerging and shall continue to emerge that possibly be useful to mankind. AI appears to be a reassuring modality in their various domains of medical sciences [Figure 1].

Robots with AI are being used for patient assessment and drug delivery to patients. This technology can be used to deliver food, drugs, monitoring like temperature, blood sugar, etc. AI-based social robots are used for interacting with patients.

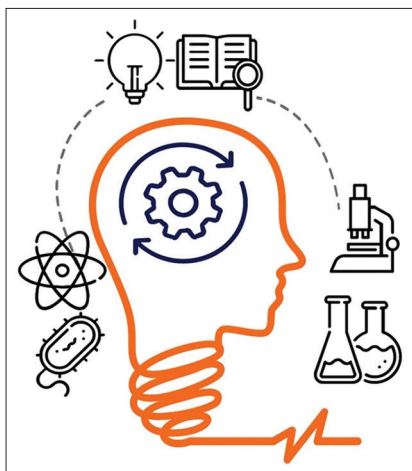


Figure 1: Dimensions of artificial intelligence in clinical practice

But a smiling greeting by a health care worker during a visit to the patient itself has a major reassuring impact on mind and healing. Every patient behaves differently, and no patient behaves like an ideal disease trajectory. The human approach and flexibility of disease and flexibility of treatment are irreplaceable. An ideal computer-based algorithm cannot be applied to every patient. Theoretical and practical aspects are different and cannot be fixed algorithm-based. This becomes an issue for novel diseases and diseases wherein new data is emerging in its various aspects of management. Although, there is a conversational form of AI such as chatbot, and communication can be carried out through different modalities in the form of video, audio, or text messages. However, there is always a greater chance of error in virtual communication rather than the real one. Group counseling programs can also be carried out via ZOOM web-based application, Facetime, or Skype web-based applications to provide mental support and care. But the real face-to-face interaction has a major role in healing soul and mind rather than virtual interactions. AI is losing the value of human touch, consoling words, and reassurance from treating doctors. Hence, as an acceptable norm of individualized medicine, we need to use these AI-based technologies in a more individualized manner for a selected group of patients and diseases. The role of AI-based technology in teaching and training in medical sciences is also emerging.^[3] The pandemic outbreak has replaced the classroom method of teaching with online execution of teaching practices and simulators. This change was primarily due to compulsion given the present pandemic. Whether the sole AI-based virtual model is effective for quality delivery of teaching and training needs to be ascertained. The integrated or hybrid model appears to be beneficial wherein certain aspects may be kept online and other domains may be taught via real-time group discussions and interaction including hands-on exercises. Though online modality allows flexibility the real-time presence may have an impact on attention and understanding of the topic being discussed. AI should be used as an aid to help human beings in reducing the work burden, compiling data, analysis of data but it just cannot replace human beings.

Virtual-reality simulators are used for developing skills related to examination, surgery, and resuscitation in medical sciences.^[4] Simulator-based training can be on several skills like chest compression, central venous cannulation, arterial cannulation, endotracheal intubation, tracheostomy, and cricothyrotomy. Virtual patients are used for developing clinical examination skills, procedural learning, and to cultivate communication skills while the fact is that we need to deal with actual patients. AI in the field of anaesthesiology

includes perioperative care, intensive care, pain management, drug delivery, and monitoring. AI algorithms have been used to develop intelligent pain management techniques for patients. But small words of reassurance and consoling power have a long impact rather than artificial and insensitive robots.

AI has its own set of limitations. It is risky to experiment with new technologies that need continuous supervision by human beings. It cannot replace the human skills, human communication, and empathy of hospital staff. It also needs to be updated as the practice of medicine remains evidence-based and newer evidence is generated globally. AI systems are still at a preliminary stage and immature and its auto-updation still needs a human interface. Long term results are awaited. There is a lack of data regarding its efficacy. The cost-benefit ratio also needs to be considered while using it.

This technology is going to stay with us in the future. Thus, we should adopt the right technology to protect the value of society and without playing with human emotions. It can be used to complement the human brain but should not be used as a sole technology. Technology is to help us and not overpower us. There should be a balance between the AI-human interface. AI should be combined with human intelligence for collective results.

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