Artificial Intelligence and Health Care: A Perspective

Subhash C Parija[1], Sukanto Sarkar[2]

It is no more than a fact that artificial intelligence, i.e., intelligent machines working and reacting like humans, has already become part of our lives. It would not be uncommon to have experienced virtual assistants in our mobile phones. It is only a matter of time, when the healthcare team would be witnessing the surge of artificial intelligence application in health care.[1]

It was just a year ago when Google showcased its artificial intelligence deep learning effects on the retinal scan. Studies are showing the scope of wider use of artificial intelligence in certain functional areas of health care, such as radiology. In addition, an artificial intelligence system is expected to help in reducing diagnostic and therapeutic errors that are inevitable in the human clinical practice. According to a 2016 report from CB insights, about 86% of healthcare provider organizations are spending on artificial intelligence. By 2020, these organizations will spend an average of $54 million on artificial intelligence projects.[2]

Artificial intelligence will make a huge impact on the key areas of health care. The first being the management of medical records.[1] The movement is evident that at present it is not just data management but data automation. The facilitation of repetitive accurate tasks in health care will prove immensely beneficial. This feature of artificial intelligence may be particularly useful in diagnostics. The virtual nurses in assisting staff with nonpatient procedural tasks have already become a reality. This allows better engagement between the nursing staff and patients.[3] Also, health monitoring and tracking have come to the personal displays of the smartwatches. However, the proliferation of digital app consultation and management is rather a bothersome issue to be addressed. Artificial intelligence also aims to mimic human cognitive functions.[4] It will bring a paradigm shift to health care, by increasing the availability of healthcare data and rapid progress of medical data analysis.

The advancements in artificial intelligence boast "precision" as the selling quality. But, machine learning system is not devoid of pitfalls. The report of Royal College, UK, on artificial intelligence and health care is as follows:[1]

- Training and testing on data are not clinically meaningful.
- Lack of independent blinded evaluation on real-world data.
- Narrow applications cannot generalize to clinical use.
- Inconsistent means of measuring the performance of algorithms.
- Commercial developers' hype may be based on unpublished, untested, and unverifiable results.

Thus, the need of the hour is to search answers for the most daunting questions,[5] namely

[1]Sri Balaji Vidyapeeth, Pillaiyarkuppam, Puducherry, India

[2]Department of Psychiatry, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Puducherry, India

Corresponding Author: Sukanto Sarkar, Department of Psychiatry, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Puducherry, India, Phone: +91 9655489210, e-mail: sukantosarkar@mgmcri.ac.in

- Will it be a grapple or a smooth marriage between the technological advancements and the end users?
- Will artificial intelligence keep up the principle of primum nocere?
- The other ethical considerations such as privacy, confidentiality, the role, and the boundary of doctors and machines in patient care.
- What are the adjustments needed in the medical curriculum to equip the future doctors?

The future of artificial intelligence is immense. But, we are sure that human physicians will not be replaced by machines. However, artificial intelligence can definitely assist physicians to make better clinical decisions or even replace human judgment in certain functional areas of health care.[3] The only plausible way to address these complex issues is early involvement of the medical fraternity as partners in the creation of the tool and not just receiving as end users.

References

1. Jiang F, Jiang Y, Zhi H, Dong Y, Li H, Ma S, et al. Artificial intelligence in healthcare: past, present and future. Stroke Vasc Neurol 2017;21: 230–243. DOI: 10.1136/svn-2017-000101.
2. Hamet P, Tremblay J. Artificial intelligence in medicine. Metabolism 2017;69S:S36–S40. DOI: 10.1016/j.metabol.2017.01.011.
3. Yu K, Beam AL, Kohane IS. Artificial intelligence in healthcare. Nat Biomed Eng 2018;2:719–731. DOI: 10.1038/s41551-018-0305-z.
4. Hassabis D, Kumaran D, Summerfield C, Botvinick M. Neuroscience-Inspired Artificial Intelligence. Neuron 2017;19:245–258. DOI: 10.1016/j.neuron.2017.06.011.
5. Rigby MJ. Ethical Dimensions of using Artificial Intelligence in health care. AMA J Ethics 2019;21:E121–E124. DOI: 10.1001/amajethics.2019.121.