

Artificial Intelligence in Healthcare -Opportunities and Challenges

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Abstract

The sophistication and increase in medical information led to the growing deployment in artificial intelligence (AI) in the sector. Different forms of AI are now utilised by payors and health care companies and enterprises in the life sciences. The critical implementation fields include guidelines regarding care and recovery, dedication and loyalty of treatments, as well as administrative tasks. This paper aims to explore the opportunities and challenges of AI in the healthcare sector. The researcher followed the systematic review method to analyse recent literature. Although it is often possible for AI to perform remedial work better than or as well as human beings, implementing factors will help stop the large-scale mechanisation of occupational health jobs over a significant length of time. There are also legal issues with the application of AI to healthcare.

Keywords: Artificial intelligence, healthcare, diagnosis, treatment, ethical issues

Introduction

Artificial intelligence (AI) and related technologies are increasingly expanding throughout business and society and are starting to be applied to healthcare. These developments will transform many aspects of health care as well as structural frameworks within clinics, payers and healthcare organizations(Davenport & Kalakota, 2019).

Recently, AI can manage vital health aspects such as cancer detection as well or better than men. There are also various findings. Algorithms are already superior to malignant radiologists and leading scientists in the preparation of samples for expensive clinical trials. Across some ways, though, we accept that AI would overtake humans across large parts of the healing cycle many

years back. Throughout the present article, both the potential of AI to reduce treatment aspects and certain barriers to effective AI implementation throughout health care are addressed.

The objective of the study

The aim of this paper to study the following objectives

1. To understand the use of artificial intelligence in the healthcare sector
2. To explore different opportunities and challenges of the healthcare sector.

Research methodology

After using specified keywords search in the different reputed database, there are lots of articles that have been derived from the search. Then the researcher chose a limited number of material as per the context of the study and made a systematic analysis of the literature to understand the role of AI in the healthcare sector and its challenges and opportunities.

Literature review

Yu & Kohane (2019) explained through recent developments in machine learning technology, several medical functions commonly believed to involve human experience have been achieved by AI programs at or beyond the degree of precision of human experts. Such essential presentations vary from the examination of retinography and histopathology funds to the reading of chest radiography and the measurement of skin lesions. Such trials have covered a very significant number of people and have been thoroughly applied to physicians. Nevertheless, both of these experiments are historical, given that they include a set of identified cases from which Artificial intelligence is equipped and a selection from which they are checked or validated. They have not yet come for regular prospective usage in a setting where the Frame Issue is more pathologically represented.

Kelly et al. (2019) stated main barriers to the introduction of AI technologies into healthcare involve machine-learning technologies fundamental, technological challenges in its application, identification of barriers and required socio-cultural or route changes. When part of randomized clinical trials, rigorous, peer-reviewed research tests should be regarded as a high standard in

data gathering. However, in practice this is not generally reasonable or realistic. Quality metrics can reflect real scientific significance and be convenient for expected consumers to grasp. A strategy to harmonize success with the potential for risk is important to improve stringent post-market oversight and insure that customers are either not exposed and adverse products or are refused significant access to beneficial innovation. Mechanisms for the use of open, local and representative assessments for direct comparisons of AI systems must be established. Developers of IA algorithms should be vigilant regarding possible threats, including shifts in the dataset, accidental misunderstanding, unwanted ethnic bias, generalization problems in various cultures and unexpected adverse health effects from the latest algorithms.

Guan, (2019) explained in a broad variety of areas, such as healthcare, artificial intelligence (AI) is being more and more adopted and seen as a method for strengthening or substituting primary health practitioners. However, AI still raises a number of legal issues and problems. This article explores and discusses three aspects of AI: the application and promise of AI; special AI ethical problems in some boundary regions; and alternative systems of moral governance. Despite the enormous potential of advanced AI science and development in medical therapy, new governance requirements have been developed owing to legal challenges triggered by the application. In order to guarantee "trustworthy" AI applications in health and medicine it has been suggested to create an ethnological regional governance framework and system as well as unique requirements for boundary and AI medical applications. The role of governments in ethical audit and actors' obligations in the moral management framework are the major considerations.

Emanuel & Wachter,(2019) studied that Artificial intelligence (AI) has achieved the "magic bullet" in medicine through its multiple scientific ties (e.g. massive files, deep processing, machine learning). Desperate for a solution to the never-ending issues of cost, size, liquidity, and affordability, a constant stream of articles, blogs, and public pronouncements make it clear that health care is on the verge of a "New Change," one that will inevitably lead to high-quality services.

While AI was responsible for some ground-breaking advances, particularly in the field of visual pattern recognition, the main challenge should be to translate AI-derived predictions or recommendations into practical action.

Stead (2018) stated throughout the core of clinical science, artificial intelligence (AI) and deep learning join. Deep learning algorithms for the identification of diabetic retinopathy in images of retinal funds are developed and validated—the first medical system to utilise AI for diabetic retinopathy diagnosis. FDA minimised the possibility of launching the system by requiring the usage of an eye prescription to test adults with visual effects that outweigh moderate retinopathy.

Maddox et al., (2019) described that throughout the field of biomedical research, artificial intelligence (AI) is now increasingly noticeable. AI has been broadly established and aims at imitating human comprehension of machine programs. This is achieved by iterative hybrid designs, which typically transcend human capacities at a pace and size. Always with excitement, proponents say that AI would revolutionise patients and communities' health care. Key questions need to be resolved, however, to fulfil his pledge.

Wiljer & Hakim, (2019) stated Artificial intelligence (AI), from the diagnosis to analysis and avoidance, can impact nearly any area of health care. Nevertheless, the introduction of emerging technologies in the world of health care is far from late. Health staff and organisations must be willing to adapt and grow and incorporate these emerging technologies. To all health practitioners, explicit knowledge of new AI technology would be necessary. Other innovations include expert networks, development of autonomous operations, natural language therapy, computer intelligence and profound learning. Health practitioners and institutions will improve their willingness and capacity to recognise and implement innovations accordingly. Such awareness continues with the literacy of simple AIs, including the concepts of data governance, essential facts, data presentation, and clinical process effects. Health care practitioners and institutions, such as knowledge exposure and the preparation of clinical practice systems, would have to resolve many obstacles and tackle crucial institutional problems. However, health professionals can shape how AI is used and the results achieved. Training and preparation are desperately required to allow viable technology to be implemented quickly, resulting in a safer future for our patients and societies.

Kulikowski, (2019) explained a significant shift in perspective in all artificial intelligence (AI) work was the development of the experts on biomedical heuristic information-dependent solutions to the machine and problem-solving, science inquiry and professional consulting, starting throughout the 1970s. The outcome was Since then; AI has developed, with its

persistence in different "winters," since it has run into the alternative of utilising machine learning approaches to secure classification rules from labelled databases and the reliant upon costly and hard-to-validate information-based approaches. We've seen the two intertwinings gradually yet progressively over the past few decades. Biomedical information-based programs played a crucial role in shaping AI in its early days, but 50 years later they have taken a seat behind 'deep learning' that aims to uncover information mechanisms both in research and clinical decision-making help. Recent AI research became more valuable to explain and inform than to clinical practice as was initially meant for the professional consultation. Currently, while there are several records of profound learning achievements, fundamental empirical difficulties emerge in building on models of brain science, perception and language, if IA wants to improve and complement human judgement and knowledge in biomedicine instead of eliminating it and also integrating these developments in translational medicine. Learning and knowing the specific and customised therapeutic phenotypes needs not only empirical analysis but also humanistic care models to adapt to the patients' and practicers' experiences, as individual experts' stories and observations promote what Norbert Winer defines as the ethical 'human usage of individual beings' as being essential to treating them.

Coiera,(1996) studied that the first medical information research is twenty-five years old. The sector has drawn many of the finest informaticians during this period, and its success is a magnificent achievement. Medical information research has not been active, however – although progress is perceived to affect professional practice. Most previous initiatives at medical information research centred on problems at the crossroads between parents' medical and artificial intelligence disciplines. Medical information research will also strive to seek expertise and work on finding responses to questions at the very core of professional practice. Through a focus on the evidence-based practice of medicine will create the necessary climate for this transition.

Habli et al. (2020) explained the risk of damage to patients induced by actions made by an artificial intelligence healthcare method is something that is not yet suited to existing worldwide transparency and protection standards. We concentrate on two facets of clinical unnatural intelligent conduct that is used to assess decision-making: moral responsibility for damage to patients. Intelligence digital systems threaten traditional clinical procedures for fault attribution

and protection. Human doctors and health engineers are less conscious of the decision-making mechanisms of artificial intelligence and less informed of the precise decision-making of artificial intelligence programs. This analysis is illustrated by an example of an artificial intelligence system for use in sepsis treatment. The article continues with concrete recommendations for how to address such issues. They claim in their evaluations of patient risk moral obligation for the need to combine artificial intelligence creators and device protection engineers. While none of the model's players firmly uphold the general moral obligations of false intelligence program decisions. Therefore, in this sense, we will modernise our perspectives on moral responsibility. They will need to switch from a static paradigm to a fluid one, realising that during artificial intelligence program implementation safety issues can not be addressed entirely until the framework is implemented.

Meskó et al. (2018) studied that Artificial intelligence (AI) can alleviate the healthcare problem with the help of treatment, decision-making, automation and management. We first need to work with the challenges to science, ethics and regulation.

The human resources problem is growing across the globe, and treatment for workers can not be given. Why will new medical advances help address the different challenges of human resources? Is technology going to motivate or kill physicians? Where do you train practitioners for the usage of technology for the Health Curriculum, which covers postgraduate education? Such problems have evolved for decades, and physical wellness is about to become a commitment to emerging technology. Authors of this article argue that AI not only fills the human resources gap but also raises ethical issues that we must address today.

While more concerns are still to be asked, our stance is that AI is not meant to substitute caregivers, but AI consumers are going to replace those not. So this is anything that should be done.

Conclusion

AI appraisal of healthcare has a long tradition and a tradition. Although evaluators are willing to benefit from previous attempts and rely on definitions and methodologies for best practices assessment, concerns arise about whether the protection and efficacy of AI will be assessed when leveraging immense volumes of genetic, biomarker, phenotype and online information, and

treatment data from around health systems, globally. This paper first offers a historical overview of healthcare IA assessment. This then discusses the critical challenges of assessing clinical decision-making support for AI through planning, growth, collection, usage and continuous monitoring. Practical dimensions of health care AI assessment are often addressed, including measurement methods and AI control metrics.

To ensure secure and efficient incorporation for AIs in diverse socio-technical settings, a dedication to strict initial and continuous assessment would be necessary. Practical implementation can contribute to significant changes appropriate for the next level of support for AI-enabled clinical decision making.

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