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The Legal Implications of Artificial Intelligence in Healthcare

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Abstract

This comprehensive research article examines the integration of Artificial Intelligence (AI) in India's healthcare sector, highlighting its potential to address challenges like rising patient demands, chronic diseases, and resource constraints. The study underscores the pivotal role of AI, particularly machine learning, in transforming healthcare through data-driven insights. It explores how AI, through its algorithms and neural networks, can revolutionize diagnostics, drug discovery, and personalized care, but also acknowledges the potential risks, including data inaccuracies and breaches. The article stresses the need for robust governance frameworks in India to ensure ethical AI integration and protect against potential harms, aligning with principles like the Hippocratic Oath. Further, the article delves into the legal aspects of AI in healthcare, addressing liability issues and the need for stringent data privacy measures under Indian law. It discusses the critical role of Electronic Health Records (EHR) in AI-based health research and the importance of data quality. The article also highlights AI's potential in predictive healthcare and in addressing healthcare disparities across diverse Indian populations. Additionally, the research explores ethical challenges, emphasizing the need for responsible AI systems characterized by transparency, explainability, and accountability. It discusses the moral dilemmas in AI's use in healthcare, the risk of data bias, and the importance of diverse and inclusive programming teams. The article concludes by advocating for a balanced approach to AI integration in healthcare, ensuring it complements rather than replaces human expertise, and calls for continuous collaboration among stakeholders to create a technologically advanced yet ethically sound healthcare system.

Keywords- Artificial Intelligence, healthcare in India, machine learning, data privacy, ethical AI, Electronic Health Records, predictive healthcare, legal implications, algorithmic transparency, data bias, stakeholder collaboration.

Introduction

The rapidly expanding healthcare industry in India is confronted with a myriad of issues, some of which include an increase in the number of patients requiring help, an increase in the prevalence of chronic diseases, and major limitations on available resources. In spite of these obstacles, there is an increasing reliance on digital health technologies and an increase in the amount of data that is being generated across all healthcare settings. In the event that this data is utilised in an efficient manner, it has the potential to enable medical practitioners to concentrate more on the factors that lead to illnesses and to assess the effectiveness of preventative measures and therapies. The occurrence of this event highlights the importance of policymakers, legislators, and other decision-makers in India being aware of the situation and actively participating in it.

It is widely believed that Artificial Intelligence (AI), and more specifically machine learning, will play a significant role in the transformation of the healthcare industry. A program's capacity to carry out activities that require human intellect, including as thinking, learning, adaptation, sensory understanding, and interaction, is referred to as artificial intelligence (AI) in the field of computers. Artificial intelligence (AI) systems, in contrast to traditional computer algorithms, which adhere to a predetermined set of rules, acquire these rules through continuous exposure to training data. Within the context of healthcare in India, artificial intelligence has the potential to change the sector by providing meaningful insights from the huge volumes of digital data generated throughout the delivery of healthcare products and services.[1]

Combining software and hardware components is often required for the application of AI in the healthcare industry. From a software point of view, artificial intelligence (AI) is primarily concerned with algorithms, such as artificial neural networks (ANNs), which are intended to simulate the functioning of the human brain. When applied to big data sets, these algorithms are able to recognise intricate and non-linear correlations. These machines improve the accuracy of predictive models by continuously training themselves and automatically correcting any errors that they make.

The implementation of such cutting-edge technology, on the other hand, raises concerns about the possibility of errors and breaches of data, particularly in the high-stakes field of healthcare, where mistakes can have significant repercussions for patients. It is especially important to keep this in mind in India, where patients frequently come into contact with medical personnel at the most vulnerable times in their lives. An efficient collaboration between artificial intelligence (AI) and doctors, in which AI performs evidence-based management and provides assistance in medical decision-making, has the potential to greatly improve the delivery of healthcare. Applications in areas including as diagnostics, drug development, epidemiology, tailored treatment, and operational efficiency are included in this category.

In spite of this, the incorporation of AI technologies into medical practise in India calls for the establishment of a solid governance framework. This framework ought to safeguard individuals from damage, including activities that are unethical, and it ought to conform with ethical norms that are anchored in the principles of the Hippocratic Oath.

In India, machine learning-healthcare applications (ML-HCAs), which were once considered to be beyond the realm of possibility, are now entering the realm of clinical practise. The regulatory authorities have given their blessing to autonomous artificial intelligence diagnostic systems that are based on machine learning, which is evidence of this transition. These computer programmes are intended to acquire knowledge from extensive datasets and to generate predictions on their own, without the need for explicit programming. Because of this, the Indian healthcare industry

[1]Morley J, Floridi L. An ethically mindful approach to AI for Health Care. SSRN Electron J. (2020) 395:254–5. doi: 10.2139/ssrn.3830536

is on the verge of undergoing a huge transition that will be driven by artificial intelligence and machine learning. This transformation has the potential to reimagine patient care and medical practises in the country.

In the field of healthcare, one of the most significant legal concerns is the liability that is associated with judgments made by AI. In India, where medical negligence is primarily governed by the Consumer Protection Act and professional standards established by the Medical Council of India, the introduction of artificial intelligence raises questions about who is liable in cases of misdiagnosis or treatment errors. The healthcare provider, the AI software developer, or the manufacturer of the AI system could be held liable for these errors. In the field of healthcare, the Indian legal system would need to establish clear standards and liability norms for judgments that are helped by artificial intelligence.

There are also other important legal considerations, such as data privacy and security. Having passed the Information Technology Act of 2000 and the Personal Data Protection Bill, India has begun to address the difficulties that are associated with the management of digital data. On the other hand, the healthcare industry deals with sensitive personal health information, which calls for more stringent data privacy procedures. In order to prevent the misuse of artificial intelligence systems in the healthcare industry and unlawful access to patient data, the legal framework must ensure that these systems comply to strong data privacy regulations.[2]

It is also necessary to have certain regulations and standards in place for the development, testing, and implementation of artificial intelligence in the healthcare industry in order to guarantee both safety and effectiveness. It is necessary for the government of India and regulatory bodies such as the Central Drugs Standard Control Organization (CDSCO) to establish standards for the approval of artificial intelligence-based medical devices and software. These standards should be similar to the way that drugs and traditional medical devices are regulated.[3]

A further particular challenge is presented by intellectual property rights (IPR) in relation to artificial intelligence algorithms and datasets in the healthcare industry. The Indian intellectual property rights (IPR) policy needs to strike a balance between preserving the ideas of developers and making sure that these innovations are available to the general public at prices that are affordable to them.[4]

[2]Miller DD, Brown EW. Artificial Intelligence in medical practice: the question to the answer? Am J Med. (2018) 131:129–33. doi: 10.1016/j.amjmed.2017.10.035
[3]Rong G, Mendez A, Bou Assi E, Zhao B, Sawan M. Artificial intelligence in healthcare: review and prediction case studies. Engineering. (2020) 6:291–301. doi: 10.1016/j.eng.2019.08.015
[4]Drukker L, Noble JA, Papageorghiou AT. Introduction to artificial intelligence in ultrasound imaging in Obstetrics and Gynecology. Ultrasound Obstetr Gynecol. (2020) 56:498–505. doi: 10.1002/uog.22122

In the field of artificial intelligence-based health research in India, one of the most important areas is the usage of data from electronic health records (EHR). The success of artificial intelligence in this field, on the other hand, is dependent on the quality of the underlying information technology systems and databases. These systems need to be able to manage a wide variety of datasets, some of which could be extremely large, without adversely affecting the quality of the data.

Artificial intelligence that is connected with electronic health records has the potential to play a transformative role in India's healthcare industry, which is characterised by a mix of urban and rural settings, various levels of technology adoption, and a variety of health concerns. AI can be utilised not only for the purpose of conducting scientific study, but also for the purpose of improving the standard of clinical treatment and raising the efficiency of healthcare delivery procedures. AI has the ability to effectively evaluate electronic health data in order to discover clinical best practises if it is equipped with a database that is both comprehensive and well-curated. The process of scientific discovery can be greatly sped up as a result of this, which can result in the establishment of clinical guidelines and the development of enhanced clinical support systems occurring more quickly.[5]

Further, artificial intelligence has the potential to make it easier for new forms of healthcare delivery to emerge in India. It is possible for artificial intelligence to identify efficient healthcare delivery patterns by analysing trends in clinical practise that are derived from electronic health records (EHRs). Additionally, AI can adapt to the diverse needs of the Indian population and propose models that are cost-effective, accessible, and equitable. The importance of this cannot be overstated in India, where the resources available for medical care are sometimes scarce and poorly distributed.Taking this a step further, artificial intelligence in electronic health records can also help with predictive healthcare in India. Artificial intelligence is able to forecast disease outbreaks, identify patient groups that are at high risk, and assist in the development of early intervention methods by evaluating patient data over time. Particularly important for a nation like India, where early identification and preventative healthcare can significantly lessen the strain placed on the healthcare system, this is an essential component.Furthermore, in the setting of India, where linguistic and cultural diversity can frequently present obstacles in the implementation of healthcare service, artificial intelligence can be of assistance in overcoming these obstacles. It is able to provide insights into the behaviour of patients, the outcomes of treatment, and successful communication tactics across a variety of areas and cultures within the country.[6]

[5]Smith H. Clinical AI: opacity, accountability, responsibility and liability. AI Soc. (2020) 36:535–45. doi: 10.1007/s00146-020-01019-6
[6]Taddeo M, Floridi L. How AI can be a force for good. Science. (2018) 361:751–2. doi: 10.1126/science.aat5991

It is projected that artificial intelligence will change the pharmaceutical sector in the years to come by simplifying and speeding up the process of medication development. Using artificial intelligence, drug discovery can be transformed from a process that is traditionally labor-intensive into one that is more dependent on capital and data. This is accomplished by integrating robotics and sophisticated models that encompass genetic targets, drugs, organs, diseases and their progression, pharmacokinetics, safety, and efficacy. It is anticipated that the application of artificial intelligence in the field of drug research and development would result in an increase in the rate of speed, cost-effectiveness, and efficiency of these processes.[7]

The ability of artificial intelligence to quickly sort through enormous datasets and locate possible leads has the potential to dramatically cut down on the amount of time and resources that are needed during the early phases of drug development. The potential of artificial intelligence has already been demonstrated in situations such as the identification of potential treatments for the Ebola virus. It is important to note that the discovery of a promising lead molecule through AI does not automatically guarantee the successful creation of a treatment that is both safe and effective with regard to the treatment of the disease. This exemplifies the revolutionary role that artificial intelligence may play in expediting the route from research to viable solutions for the pharmaceutical industry.

Navigating Ethical Dilemmas in AI

An ongoing discussion is taking place regarding whether or not Artificial Intelligence (AI) can be accommodated within the frameworks of existing legal systems, or whether it requires the establishment of a new legal category in order to take into account the distinctive characteristics and implications of AI. While the incorporation of artificial intelligence into clinical practise holds enormous promise for the improvement of healthcare, it also brings to the forefront a number of ethical problems that require rapid attention. It is essential to address four key ethical concerns in order to fully harness the potential of artificial intelligence in the healthcare industry. These concerns are as follows: (1) obtaining informed consent for data usage; (2) ensuring safety and transparency in AI systems; (3) mitigating algorithmic biases and ensuring fairness; and (4) maintaining stringent data privacy standards.[8]

As stated in the Resolution that was passed by the European Parliament on February 16, 2017, the question of whether or not artificial intelligence systems can be legally recognised is not just a matter of legal interpretation but also a topic of political debate. Assisting policymakers in

[7]Arieno A, Chan A, Destounis SV. A review of the role of augmented intelligence in breast imaging: from Automated Breast Density Assessment to risk stratification. Am J Roentgenol. (2019) 212:259–70. doi: 10.2214/AJR.18.20391
[8]De Fauw J, Ledsam JR, Romera-Paredes B, Nikolov S, Tomasev N, Blackwell S, et al. Clinically applicable deep learning for diagnosis and referral in retinal disease. Nat Med. (2018) 24:1342–50. doi: 10.1038/s41591-018-0107-6

proactively addressing the moral and ethical challenges that are brought by the implementation of artificial intelligence in healthcare settings is the objective of this article.

In the context of legal concerns about artificial intelligence, the limitation in algorithmic openness is a fundamental issue. As artificial intelligence (AI) continues to play a more major role in high-risk scenarios, the essential requirement for AI systems to be accountable, egalitarian, and transparent becomes more and more obvious. Accessibility and understandability of information regarding the operation of artificial intelligence systems are both essential components of transparency. A significant number of times, information concerning the operation of these algorithms is purposefully concealed, which creates a problem for both comprehension and supervision.

There is a rising worry regarding the difficulties of assigning responsibility to the individuals who develop or operate artificial intelligence systems. Considering that these systems are able to function according to ever-changing norms and acquire new behavioural patterns, they have the potential to pose a danger to the moral fibre of society as well as the fundamental principles of liability in the legal system. A situation in which there is no obvious entity to hold accountable for any harm created could arise as a result of the expanding use of artificial intelligence (AI). We do not yet have a complete understanding of the magnitude of the risks that are linked with the utilisation of AI, and the deployment of this technology may considerably impair our capacity to assign responsibility and take ownership of decision-making processes.

The modern computing technologies used in Artificial Intelligence Systems (AIS) have the potential to conceal the reasoning behind its outputs, which makes it difficult to conduct meaningful examinations. Consequently, this results in a circumstance in which the method by which an AIS arrives at its results is seen as "black." The complexity of an AIS's operations may be difficult to comprehend for physicians who have not received technical training in computer science, despite the fact that they may be easily understandable for a technology worker who specialises in that particular field.

By offering assistance to medical practitioners, systems such as IBM's Watson for Oncology are intended to facilitate clinical decision-making and provide assistance to medical experts. In the process of analysing patient information and providing recommendations for care, these artificial intelligence systems have the potential to revolutionise the landscape of clinical decision-making. Both the incorporation of AIS into clinical practise and the establishment of new dynamics among stakeholders in the healthcare industry are poised to bring about a revolution in the manner in which choices are made in the healthcare industry. When it comes to the secure application of these technologies in clinical settings, clinicians, which includes medical professionals such as doctors and nurses, as well as other healthcare workers, are essential stakeholders.

In terms of their intended aims, design techniques, and application domains, the variety of Machine Learning-Healthcare Applications (ML-HCAs) that are currently at the forefront of development is extensive. The applications of these technologies range from fully autonomous systems, such as artificial intelligence for diagnosing diabetic retinopathy in primary care, to less independent systems that are used for predicting mortality and providing assistance in making decisions regarding policy and resource allocation. It is of the utmost importance for researchers to explain the manner in which the results of these systems might be incorporated into their study, including the formulation of predictions. When it comes to judging the value of clinical trials and defining the path that scientific research should take, information of this kind is absolutely necessary.

Artificial intelligence in the healthcare industry needs to be able to adjust to a constantly shifting environment that is rife with frequent disturbances while maintaining ethical standards in order to protect the health of patients. It is essential to have the capacity to analyse and comprehend the potential failure modes of any healthcare application in order to have a fundamental understanding of the safety of the application. In this way, it is comparable to having an understanding of the components and physiological mechanisms that are present in mechanical devices or drugs. ML-HCAs, on the other hand, frequently provide a "black box" dilemma, which means that the internal workings of these devices are not transparent to evaluators, treating physicians, or patients. In order to effectively incorporate these outputs into their studies, including predictive models, researchers need to provide an explanation of how this might be accomplished. This clarity is vital for determining the cost and effectiveness of clinical trials, as well as for directing the path that scientific investigations will take.[9]

International Regulatory Frameworks for AI

There was a detailed study that was done, supervised, and disseminated by the policy department of the European Parliament that was dedicated to "Citizens' Rights and Constitutional Affairs." The resolution that was enacted by the European Parliament was a response to this study. This action was taken in response to a request made by the Committee on Legal Affairs of the European Parliament. The urgent need for a legislative framework that is especially created to control robotics and artificial intelligence is brought to light in the report that serves as the basis for this resolution. Not only should such a framework take into account the technological capabilities that are currently available, but it should also be adaptable enough to accommodate the anticipated scientific developments that will occur in the medium future. There is a strong

[9]Dudley JT, Listgarten J, Stegle O, Brenner SE, Parts L. Personalized medicine: from genotypes, molecular phenotypes and the Quantified Self, towards improved medicine. Pac Symp Biocomput. (2015) 342–6. doi: 10.1142/9789814644730_0033

focus placed on the early formation of legal instruments that are capable of keeping up with the rapid changes that are occurring in the field of artificial intelligence and robotic sciences.[10]

The Imperative of Accountability in AI

When confronted with changes in settings or contexts, artificial intelligence systems, despite their high level of sophistication, are capable of exhibiting unexpected and severe failures. These systems are capable of displaying great levels of intelligence in a matter of moments, but they may also display surprising degrees of naivety in the same period of seconds. It is of the utmost importance to acknowledge that every artificial intelligence system possesses fundamental limitations, regardless of how skillfully bias is managed by AI. It is absolutely necessary for human users, particularly those who make decisions, to have a complete understanding of these constraints in order for the implementation to be successful. In order to avoid completely replacing human decision-making processes, the artificial intelligence system should be built to supplement and support those processes.

In the realm of medical diagnostics and treatment, for example, the great accuracy of AI systems might lead to a false sense of security among medical practitioners. This is just one example. It is possible that this complacency will lead to a loss in their professional skills as well as a diminishing sense of involvement and happiness with the work that they do. In the same vein, users may place an excessive amount of reliance on decision-support tools without sufficiently recognising the limitations of these technologies. The scope of this problem is not restricted to the healthcare industry; rather, it extends to other fields as well, such as the criminal justice system, where decisions made by judges that were affected by incorrect risk assessments have resulted in major consequences.

In addition, the deployment of artificial intelligence without human control poses serious concerns regarding cybersecurity. The use of artificial intelligence (AI) in surveillance or cybersecurity, particularly in the context of national security, is related with the introduction of new vulnerabilities, such as those associated with "data diet" difficulties, as stated in a paper by RAND views. There is also a growing worry regarding the infringement of fundamental rights brought about by the rising use of artificial intelligence by governments for activities such as citizen surveillance, which includes the use of predictive policing algorithms. These vulnerabilities in cybersecurity constitute a significant threat to vital infrastructures, which might put people's lives, their safety, and their access to resources in jeopardy. The majority of the time, these vulnerabilities are not brought to light until after they have already caused damage.[11]

[10]Barton C, Chettipally U, Zhou Y, Jiang Z, Lynn-Palevsky A, Le S, et al. Evaluation of a machine learning algorithm for up to 48-hour advance prediction of sepsis using six vital signs. Comput Biol Med. (2019) 109:79–84. doi: 10.1016/j.compbiomed.2019.04.027
[11]Morley J, Machado CCV, Burr C, Cowls J, Joshi I, Taddeo M, et al. The ethics of AI in health care: a mapping review. Soc Sci Med. (2020) 260:113172. doi: 10.1016/j.socscimed.2020.113172

Additionally, there is a rising discussion regarding the practicability, design, and ethics of lethal autonomous weapon systems (LAWS). As a result of the fact that these systems combine the immense discretion of AI autonomy with the power to inflict harm or even murder humans, they present deep moral problems regarding the creation and usage of these systems.

Also, a prevalent problem in the development of AI algorithms is the presence of bias in the selection of datasets. The findings of research conducted by Buolamwini and Gebru have indicated that automated facial recognition technologies are subject to biases, particularly in terms of their decreased accuracy for those with darker skin tones, particularly women. In order to learn, machine learning requires a large amount of data, and the majority of clinical trial datasets typically only include selected populations. As a consequence of this, algorithms that are generated from these databases might not perform well when applied to underrepresented groups, such as underserved patient populations, which could potentially result in failures in these settings. Consequently, this underscores the necessity of having datasets that are diverse and inclusive in order to guarantee that AI algorithms are successful and equitable across a variety of demographic groups.[12]

Allocating Responsibility in AI Applications

In the field of healthcare, technologists primarily function in accordance with ethical norms of practise, in contrast to physicians, who are legally obligated to be accountable for their acts. In the context of the dispute on whether or not technologists ought to be held accountable when Artificial Intelligence Systems (AIS) are utilised in the healthcare industry and have a direct influence on the results for patients, this distinction is the foundation. If an individual clinician is unable to properly comprehend the results produced by the AIS that they are utilising, it may be difficult for them to provide a justification for their actions if they rely on these data. On account of this lack of accountability, there are considerable concerns over the safety of employing AIS in clinical settings that have not been confirmed or validated.

The problem of accountability and transparency is something that impacts all of the stakeholders involved. For instance, when contemplating the ethical evaluation of healthcare-based machine learning research, it is vital to address both the conceptual and procedural adjustments that are required. The rising usage of medical devices that are based on artificial intelligence is intended to assist in decision-making regarding treatments and procedures; it is not intended to completely replace the function of the doctor. On the other hand, there is a dearth of extensive literature in this field, which suggests that the most influential policy-making agencies should work on developing precise frameworks.[13]

[12]Rodrigues R. Legal and human rights issues of AI: gaps, challenges and vulnerabilities. J Respons Technol. (2020) 4:100005. doi: 10.1016/j.jrt.2020.100005
[13]Rezler AG, Lambert P, Obenshain SS, Schwartz RL, Gibson JM, Bennahum DA. Professional decisions and ethical values in medical and law students. Acad Med. (1990) 65:. doi: 10.1097/00001888-199009000-00030

The Association for the Advancement of Artificial Intelligence (AAAI) is an organisation that promotes for the assessment and validation of AIS in a comprehensive manner. A number of essential procedures must be taken prior to the introduction of such systems, including the establishment, testing, measurement, and evaluation of their dependability, performance, safety, and ethical compliance. For physicians who utilise AIS, appropriate verification and validation can give a basis for justifying their use of such technologies. This is in line with clinical professional conduct norms, which do not tolerate activities that are not accountable. On the other hand, it should be mentioned that opacity is not uniquely associated with AIS; doctors themselves can occasionally be opaque in the decision-making processes that they engage in. In the event that AIS cannot be held accountable, the role that it plays in the care of humans may be considerably restricted. It is necessary for managers of AIS users to explain that physicians cannot avoid accountability by attributing it to the AIS. This is not something that can be done.[14]

When it comes to therapy, prognosis, or management, Assistive Machine Learning-Healthcare Applications (ML-HCAs) offer "ideas" to healthcare providers. The decision-making process is dependent on the clinician's interpretation of these suggestions. On the other side, autonomous machine learning-based health care assistants provide direct management and prognostic advice without the need for human intervention. Due to the fact that the level of autonomy that is selected by the creators of ML-HCAs has direct implications for the assignment of responsibility and liability, it is imperative that this level of autonomy be made visible.

The question that needs to be answered is not whether healthcare professionals were aware of the hazards and the possibility for bad decision-making; rather, the question that needs to be answered is whether they had the ability to comprehend and recognise these factors. This viewpoint highlights the significance of ensuring that healthcare providers receive adequate training and are well-informed about the capabilities and limitations of the artificial intelligence systems that they employ. It also emphasises the importance of adopting a balanced approach in which AI in healthcare is used to assist, but does not take precedence over human judgement and professional responsibility.

Addressing Prejudices in AI Implementation

On a wide scale, there is a growing body of research suggesting that artificial intelligence models have the ability to embed and amplify human and social biases. The data that is utilised to train these models is frequently the source of this issue, rather than the algorithms themselves where the problem originates. These models might be built on data that either directly incorporates human decisions or indirectly shows the consequences of societal or historical injustices. Both of these categories of data are possible. In addition, the approaches that are utilised for the purpose of data collecting and implementation can further deepen the existing biases. The data that is

[14] Char DS, Abràmoff MD, Feudtner C. Identifying ethical considerations for Machine Learning Healthcare Applications. Am J Bioethics. (2020) 20:7–17. doi: 10.1080/15265161.2020.1819469

provided by users, in particular, has the potential to generate a feedback loop that reinforces preexisting tendencies. In the present moment, it seems that there is a deficiency in the existence of established rules or benchmarks for reporting and comparing these models. However, future efforts in the development of artificial intelligence should concentrate on the establishment of such standards, which will provide researchers and physicians with essential direction.[15]

In today's digital systems, artificial intelligence is rapidly becoming an essential component, shifting from a luxury to an essential component. Given the growing reliance that we have on artificial intelligence for decision-making, it is of the utmost importance to guarantee that these decisions are made in an ethical manner and are devoid of any unfair biases. The consequences of this situation highlight the importance of responsible artificial intelligence systems that are defined by transparency, explainability, and responsibility. There has been a gradual increase in the utilisation of artificial intelligence systems to improve patient care pathways and surgical outcomes, with some instances even surpassing the skills of humans. There is a possibility that artificial intelligence will either supplement, cohabit with, or eventually replace the existing healthcare systems. This would usher in a new era of healthcare that is dominated by various forms of artificial intelligence. Given that artificial intelligence has the potential to greatly enhance patient outcomes and operational efficiency, it is possible that in the near future, it may be regarded unscientific and unethical to refrain from using AI in the healthcare industry.

The application of artificial intelligence in healthcare not only has the promise of bringing about improvements in patient care, but it also calls for a paradigm shift in the way that we approach technology in the medical field. In the field of healthcare, ethical artificial intelligence entails not only the creation of algorithms that are objective and equitable, but also the guarantee that these technologies be available to a wide range of populations. Among these are the elimination of inequalities in access to medical care and the guarantee that AI-driven solutions will not exacerbate the health disparities that already exist. As artificial intelligence (AI) continues to advance, it will be essential to involve a diverse group of stakeholders in a conversation about how to integrate these powerful tools into our healthcare systems in a responsible manner. These stakeholders include clinicians, technologists, patients, and policymakers (patients and clinicians). The creation of artificial intelligence systems that not only contribute to the advancement of medical knowledge but also uphold the highest standards of ethical and equitable practise should be the objective.

Conclusion

It is becoming increasingly important for artificial intelligence to continue to adhere to high moral and ethical standards as its role in healthcare continues to expand. It is one of the key difficulties that must be addressed in order to ensure that artificial intelligence is morally

[15]Mirbabaie M, Hofeditz L, Frick NR, Stieglitz S. Artificial intelligence in hospitals: providing a status quo of ethical considerations in academia to guide future research. AI Soc. (2021). doi: 10.1007/s00146-021-01239-4. [Epub ahead of print].

accountable. The utilisation of algorithms that are founded on objective, real-time data is one way to reduce the impact of this. Additionally, it is of the utmost importance to incorporate diverse and inclusive programming teams into the process of developing artificial intelligence systems. Additionally, it is vital to conduct frequent audits of the algorithms, including that they are put into practise.

Although it is highly improbable that artificial intelligence will totally replace clinical judgement, it has the potential to dramatically improve physicians' ability to make decisions. When it comes to conducting screenings and evaluations, artificial intelligence has the potential to play a vital role in situations where medical expertise is rare, particularly in settings with low resources. Because of the underlying algorithmic procedures, artificial intelligence (AI) choices are always systematic, even in situations that are occurring in real time. This is in contrast to human decision-making. The responsibility for the actions of artificial intelligence does not lie with the machine itself; rather, it is with the developers who create these systems and the professionals who use them. This is the case even if legal frameworks are not yet fully equipped to deal with issues related to artificial intelligence.

In spite of the ethical conundrums that are linked with the use of artificial intelligence in healthcare, the potential for AI to enhance, coexist with, or even replace existing systems is enormous. In the field of healthcare, this signifies the beginning of a new era that will be ruled by artificial intelligence. In light of the fact that artificial intelligence has the potential to greatly improve patient outcomes and the efficiency of healthcare, the decision to not utilise AI in the healthcare industry might be considered both unethical and unscientific.

The application of artificial intelligence in the medical field calls for a well-rounded strategy. This strategy ought to place equal emphasis not just on the development of technology but also on ethical issues, with the goal of ensuring that uses of artificial intelligence do not worsen the current gaps in healthcare. It is crucial for healthcare professionals to receive training in the usage of artificial intelligence tools. This training will enable them to properly evaluate insights offered by AI while also maintaining their role as leaders in making important decisions. Furthermore, as artificial intelligence (AI) becomes more widespread in the healthcare industry, there is a growing demand for technology professionals, healthcare providers, patients, and policymakers to engage in ongoing conversation and work together in order to develop a healthcare system that is both technologically advanced and ethically sound. The ultimate objective should be to create a healthcare system in which artificial intelligence and human expertise collaborate to provide patients with the highest possible level of care.