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Review Article

Evaluating Criminal Accountability of Artificial Intelligence in Healthcare and Medical Services

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A B S T R A C T

Introduction: The integration of Artificial Intelligence (AI) into healthcare and medical services has revolutionized the industry, offering unprecedented advancements in diagnostics, treatment, & patient care. However, this technological progress also introduces significant risks and ethical dilemmas, particularly in terms of accountability when AI systems fail.

Aim: This research critically examines the criminal accountability of AI in the healthcare sector within the Indian legal framework.

Materials and Methods: The study explores the benefits & risks associated with AI in healthcare, evaluates existing laws, & identifies gaps that hinder the effective regulation of AI-related incidents. Through a comparative analysis with international practices, the research highlights the challenges in attributing criminal liability to AI systems and the responsible parties.

Results: The research highlights the challenges in attributing criminal liability to AI systems and the responsible parties, revealing significant gaps in the current legal framework. Ethical considerations and policy recommendations are discussed to advocate for a robust regulatory framework that ensures patient safety, equity, and ethical AI usage.

Conclusion: The study emphasises the need for continuous regulatory updates and interdisciplinary collaboration to balance innovation with accountability in India's healthcare landscape.

Keywords: Artificial Intelligence, Healthcare, Medical Services, Criminal Accountability, Patient Safety, Data Privacy

Introduction

AI has become one of the most revolutionary technologies in the entire universe and especially in the healthcare industry. In the field of healthcare and medical practice, innovative applications of AI technologies for analysis of diagnostics, planning, patient monitoring and support of administrative operations have been shown to have potential for higher efficiency and a higher diagnostic accuracy. Cognitive computing is valuable in that it can examine and detect elements in large volumes of data that may be invisible to even the most experienced and skilled human clinicians, with the potential for improved and thoroughly personalised medical treatment. Finally, AI

tools are in the process of conception and training tests in predicting the disease spread, hospital resource operation and telemedicine to enhance the access and efficiency of healthcare. [1]

In India, the adoption of AI in healthcare is gaining momentum, driven by the country's burgeoning digital ecosystem and a growing emphasis on technology-driven healthcare solutions. Several public and private initiatives are underway to integrate AI into various aspects of healthcare delivery. For instance, AI is being used in imaging and radiology to enhance the detection of diseases such as tuberculosis and cancer. Moreover, AI-powered applications are aiding in managing chronic diseases, improving maternal and child health, and facilitating remote consultations in rural and underserved areas. Despite these advancements, the deployment of AI in healthcare is still in its nascent stages, with significant disparities in access and implementation across different regions. Nevertheless, there are still questions regarding regulation, infrastructure, and human capital which need to be answered so that this opportunity of AI in the healthcare sector could be taken to the full extent.

As AI technologies continue to evolve, their integration into critical sectors, including healthcare, is becoming increasingly pervasive. The reliance on AI for decision-making in clinical settings raises important questions about accountability and responsibility. Given that AI systems can influence life-and-death decisions, ensuring their reliability, safety, and ethical use is paramount. In healthcare, where errors can have profound consequences, establishing a framework for the criminal accountability of AI becomes crucial. This topic's importance is underscored by the need to protect patients' rights, maintain public trust in healthcare systems, and ensure that the benefits of AI do not come at the cost of increased risks. [2]

The dual nature of AI as a driver of innovation and a source of potential risk is particularly pronounced in the healthcare sector. On one hand, it is guarding the hope of significantly enhancing the delivery of healthcare services through better and accurate diagnosis, versatility and an increase in speed of work. On the other hand, the reliance on AI introduces new risks, such as algorithmic biases, data privacy concerns, and the possibility of technical failures. The complex interplay between these benefits and risks necessitates a thorough examination of the legal and ethical frameworks governing AI in healthcare. Addressing the potential for harm and establishing mechanisms for accountability are critical to ensuring that AI technologies enhance, rather than undermine, the quality and safety of healthcare services in India.

AI in Healthcare: Opportunities and Risks

Benefits of AI in Healthcare

AI technology has significantly enhanced the accuracy and speed of medical diagnostics. Data mining is the process where the enormous volume of data, such as the images and history of the patient, is fed to the machine learning algorithms and the system can endorse what human doctors cannot easily recognise. It may have helped to identify diseases like cancer, cardiovascular ailments, and neurological disorders at an early stage so that better interventions could be made. AI-powered tools, like radiology imaging software and pathology scanners, provide second opinions and reduce the rate of misdiagnosis, ultimately leading to improved patient outcomes.[3]

AI systems streamline administrative and clinical processes within healthcare facilities, thereby reducing operational costs and improving efficiency. Automated scheduling systems, electronic health records (EHR) management, and AI-driven triage systems optimise resource allocation and patient flow, minimising waiting times and enhancing the overall patient experience. Moreover, predictive analytics can forecast patient admissions and staffing needs, enabling hospitals to better manage their resources and reduce unnecessary expenditures. This efficiency translates to significant cost savings for both healthcare providers and patients.

AI has revolutionised medical research by accelerating the pace of scientific discovery and facilitating the development of personalised medicine. AI technologies are also able to analyse extensive quantities of genomic data to use this information in identifying genomic features of certain diseases. This has encouraged the development of care interventions influenced by one's genotype, hence advancing therapy and minimising harms. Additionally, AI models are instrumental in drug discovery and development, enabling researchers to predict drug interactions and identify potential new treatments more quickly and accurately than traditional methods.[4]

Risks Associated with AI in Healthcare

Despite its potential, AI in healthcare is not infallible. Errors can occur due to biases in training data, limitations in algorithm design, or unforeseen complexities in real-world applications. Incorrect diagnoses or inappropriate treatment recommendations from AI systems can have severe consequences for patient health. For instance, a flawed algorithm might overlook critical symptoms or suggest incorrect dosages of medication, leading to potential harm or even fatalities. These risks mean that

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there is a need to validate AI actively, always monitor it and ensure that there is human intervention in cases where the AI solution developed is not 100% reliable and safe.

The use of AI within the healthcare sector in particular is built on the gathering and analysis of patient information, which is highly sensitive, this leads to many privacy and protective concerns. These are some of the threats that patients are facing in the hospitals today whereby their information may be accessed by unauthorised persons, and the information may be hacked or abused by unauthorised persons. Strong data protection rules and adhering to law regulations like HIPAA requirements in the USA or similar laws in other states are important to a protect patient's identification. Therefore, there is also a need for clear communication when personal data is collected and how it will be utilised, especially in the healthcare context, and ensuring that patients provide informed consent to be treated using artificial intelligence solutions.[5]

One primary concern is the potential erosion of the patient-doctor relationship, as increased reliance on AI might reduce face-to-face interactions and personalised care. Ethical questions also arise around decision-making processes in critical care situations, where AI recommendations might conflict with clinical judgment or patient preferences. Additionally, the deployment of AI technologies could exacerbate existing healthcare disparities if not implemented equitably, particularly affecting marginalised or underserved communities.

Legal Framework for AI

India's legal framework pertaining to technology and healthcare intricately weaves through the nation's intricate societal fabric. The cornerstone of this framework is the IT Act, 2000, which laid the initial groundwork for regulating electronic transactions and safeguarding data. Recently, the Digital Personal Data Protection Act of 2023 was enacted, although not yet implemented, to bolster data protection measures. These legislative measures aim to safeguard sensitive health information, yet their direct application to the burgeoning field of AI in healthcare remains a contentious issue. While the legal infrastructure offers some semblance of protection, the integration of AI into healthcare presents a novel challenge that requires specific legal provisions for its governance.

The Information Technology Act, 2000 marked a significant step towards regulating electronic transactions and securing digital data. However, rapid advancements in technology, particularly under AI, have exposed certain inadequacies within the existing legal framework. The Digital Personal Data Protection Act of 2023, though a promising addition, has yet to be enforced, leaving a regulatory void in safeguarding personal health information in the digital age. While the intent behind these acts is noble, their practical application to AI-driven healthcare remains nebulous, raising pertinent questions about patient privacy, data security, and ethical considerations.[6]

The Medical Council Act provides guidelines for medical practice but falls short in addressing the integration of AI into clinical settings. The absence of specific provisions concerning AI in healthcare leaves room for interpretation, resulting in a lack of clarity regarding the legal implications of AI-generated diagnoses, treatment recommendations, and patient care. Moreover, the existing legal framework fails to adequately address issues of accountability and liability in instances of AI malfunctions or errors, further complicating the regulatory landscape.

Comparative Analysis

Legal frameworks governing AI in healthcare vary across countries, with the USA, EU, & UK serving as notable examples. In the USA, the Food and Drug Administration (FDA) has devised comprehensive guidelines specifically tailored for AI-driven medical devices. These guidelines delineate stringent approval procedures and post-market surveillance protocols, aiming to uphold patient safety and efficacy standards. For instance, AI-based diagnostic tools and medical software must undergo rigorous testing and evaluation before receiving regulatory clearance for commercialisation.[7]

Similarly, the EU's GDPR plays a pivotal role in shaping AI governance by emphasising principles of transparency, accountability, and data protection. Within healthcare, the GDPR mandates stringent regulations surrounding the processing of personal health data, thereby ensuring individuals' privacy rights are safeguarded in AI-driven decision-making processes. Compliance with GDPR provisions necessitates meticulous data handling practices and robust privacy measures, aligning AI applications with ethical and legal standards.[8]

In contrast, the UK has established the Centre for Data Ethics and Innovation (CDEI) as a specialised institution dedicated to navigating the ethical and regulatory complexities of emerging technologies, including AI. With a focus on promoting responsible innovation, the CDEI facilitates dialogue between industry stakeholders, policymakers, and academia to address ethical dilemmas and regulatory gaps. By fostering collaboration and interdisciplinary engagement, the UK endeavours to harness the transformative potential of AI while mitigating associated risks & societal impacts. [9]

For the successful integration of AI into medical care, it is crucial that both patients & healthcare providers have unwavering trust in these technologies. The foundation of this trust lies in the transparency and understanding of how patients' data is handled and utilised. Patients

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must be comprehensively informed about the data processing methods, ensuring they understand the scope and implications of their data usage. This education should not be a one-time effort but rather part of a continuous dialogue between patients and medical professionals to foster and maintain trust over time.

Moreover, recent incidents have highlighted the importance of safeguarding patient confidentiality in data sharing & implementation of AI in healthcare. For instance, the legal case of Dinerstein v. Google brought to light significant concerns about how patient data is shared and protected.[10] In this case, patients questioned whether their data was being used appropriately and securely, leading to legal scrutiny. Similarly, Project Nightingale, a collaboration between Google and Ascension, faced criticism and public outcry due to perceived lapses in patient consent and transparency. These examples underscore the necessity of robust data protection measures and clear communication strategies to ensure that patient confidentiality is not compromised in the pursuit of technological advancements in healthcare.

Moreover, Google has partnered with Aravind Eye Care System, a renowned network of hospitals in India, to address the widespread issue of cataract-related vision impairment. Aravind Eye Care System, known for its pioneering work in ophthalmology, has contributed a collection of retinal images to assist in the training of Google's advanced image processing systems. These contributions are pivotal for the development of a sophisticated retinal screening programme. This innovative technology leverages deep learning methods to distinguish between human and animal retinas. The system utilises images obtained from Google's extensive picture search and information storage systems. By analysing these images, the deep learning algorithms can accurately identify various retinal conditions. The integration of this technology into practical use is currently underway, promising significant advancements in the field of ophthalmology. Lily Peng, the product manager with the Google Brain AI research group, has addressed concerns regarding potential job displacement due to this technological advancement. She asserts that the introduction of this AI technology will not lead to unemployment. This is primarily because there is already a shortage of professionals capable of conducting retinal screenings. The AI system is designed to fill this gap by performing the screenings and predicting the likelihood of vision impairment in patients. This predictive capability will enable physicians to identify at-risk individuals early and develop appropriate treatment plans to prevent blindness. Google partnering with Aravind Eye Care System is noted to be a vital stitch in the use of artificial intelligence in medical diagnosis. From merging Google's technique in technology and Aravind's insight in medicine, this aims to increase the accuracy and rate of correct detection of retinal screenings, meaning to eradicate cataract as the leading cause of blindness. This endeavour supports the concept that AI can have a powerful positive impact in developing the health sector and in enhancing the quality of life of patients across the world.[11]

Criminal Accountability for AI in Healthcare

In the realm of Indian jurisprudence, criminal accountability serves as the bedrock upon which the legal system rests, embodying fundamental principles of culpability and responsibility for unlawful actions. It delineates a comprehensive legal framework within which individuals and organisations are held answerable for their conduct, thereby ensuring the administration of justice and deterring wrongful acts. At the heart of this concept lie two key principles: mens rea, which refers to the guilty mind, and actus reus, which pertains to the guilty act. Together, these principles form the cornerstone for determining criminal liability. Furthermore, Indian law acknowledges that criminal accountability extends beyond individual actors to encompass corporate entities, thereby recognising the collective responsibility of organisations for their actions.[12]

The intersection of AI and healthcare introduces a plethora of intricate legal and ethical considerations when applying principles of criminal accountability. The landscape becomes increasingly complex as various stakeholders navigate the development, deployment, & utilisation of AI systems in healthcare settings. Identifying the responsible parties amidst this labyrinthine network poses a formidable challenge. While developers wield significant influence in shaping AI systems, healthcare providers ultimately bear the responsibility for integrating these technologies into medical services. Moreover, the emergence of AI systems as non-human entities introduces novel questions regarding their legal status and potential liability. Effectively navigating these nuances necessitates a nuanced understanding of both legal principles and technological intricacies.

The Way Forward

Healthcare has emerged as one of the domains that has been changing its pace due to the incorporation of AI. In this area emerging advances in the application and sophistication of machine learning and natural language processing systems, big data, and analytics are revolutionising medical diagnosis and patient management strategies. These innovations are not isolated; they are intricately woven into the fabric of healthcare systems, promising to revolutionise the way we approach healthcare delivery.

One significant area where AI is making its mark is in the integration with big data analytics and the Internet of Medical Things (IoMT) devices. This integration offers a vast repository of health-related data, enabling the extraction

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of valuable insights into disease patterns, treatment efficacy, and population health trends. By leveraging AI-driven analytics, healthcare practitioners can gain a deeper understanding of patient needs and tailor interventions to individual requirements, ultimately improving health outcomes on a broader scale.

Expanding beyond clinical settings, AI also holds tremendous promise in bolstering public health efforts and preventive care strategies. Through the analysis of extensive health datasets sourced from various channels, AI algorithms can detect early signs of disease outbreaks, assess population health risks, and optimise resource allocation for preventive measures. Furthermore, AI-powered predictive modelling facilitates targeted interventions aimed at mitigating chronic conditions and promoting healthier lifestyles, both at the individual and community levels.

Though, the integration of AI in the field of healthcare has marked a positive change, there are certain issues or concerns which come along with the adoption of new technologies such as issues related to regulatory compliance, issues related to data privacy and security, and issues related to ethical compliance and standards. Thus, there remains the urgency to develop a more adaptive and updated system that is up to par with current technological advancements as well as accommodating the risk and insurance concerns of patients and their information. This paper demonstrates that to understand and perhaps solve problems such as algorithmic bias and ownership, data security, and liability the policymakers alone have to perpetually monitor and update the existing policies.

Conclusion

Given that AI is primarily experimented with in the context of healthcare, the implementation of AI in the healthcare industry is a crucial moment that can open numerous possibilities for development but also poses questions and potential issues for all the organisations involved in the delivery of healthcare services. Applying AI technology to healthcare indicates a possibility of it changing existing aspects of practice as well as improving practices in distinct fields such as diagnostics, treatment and advances in public health. But these opportunities are not without their caveats, foremost of which is the issue of data privacy, followed by concerns about algorithmic bias and legal liability, which have proven to be highly challenging factors that need to be overcome.

There is no doubt that probably the most exciting aspect of all, within the context of AI in the context of health services, is that it could dramatically increase the diagnostic capabilities of practitioners. In this way, based on patient records and advanced data analysis techniques, AI abilities allow for quickly identifying the patient's condition and its possible problems with a high level of accuracy. There are numerous benefits that are attached to this heightened diagnostic capability, that the process of treating patients is made easier as well as the chances of getting good results enhanced.

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References

1. Zakiuddin KS, Dhale SA, Fulzele PF. Implementation of AI in healthcare challenges and potential. InAIP Conference Proceedings 2024 Dec 10 (Vol. 3188, No. 1). AIP Publishing. [Googlescholar]
2. Katyal SK. Private accountability in the age of artificial intelligence. UCLA L. Rev.. 2019;66:54. [GoogleScholar]
3. Lee SL. Clicking Away Consent: Establishing Accountability and Liability Apportionment in Direct-to-Consumer Healthcare Artificial Intelligence. Brook. L. Rev.. 2022;88:1355. [GoogleScholar]
4. Takshi S. Unexpected inequality: disparate-impact from artificial intelligence in healthcare decisions. JL & Health. 2020;34:215. [Googlescholar] [Pubmed]
5. Supra note 1.
6. Jain D. Regulation of digital healthcare in India: ethical and legal challenges. InHealthcare 2023 Mar 21 (Vol. 11, No. 6, p. 911). MDPI. [GoogleScholar] [Pubmed]
7. Schönberger D. Artificial intelligence in healthcare: a critical analysis of the legal and ethical implications. International Journal of Law and Information Technology. 2019 Jun 1;27(2):171-203. [GoogleScholar]
8. Casciola C. Artificial Intelligence and Health Care: Reviewing the Algorithmic Accountability Act in Light of the European Artificial Intelligence Act. Vt. L. Rev.. 2022;47:127. [GoogleScholar]
9. Supra note 6.
10. Dinerstein v. Google. No. 1:19-cv-043 11; 2019
11. Simonite T. Google's AI eye doctor gets ready to go to work in India. WIRED. Available online: https://www. wired. com/20. 2017 Aug;17(06). [GoogleScholar]
12. Nair R. Criminal Liability of Artificial Intelligence in Healthcare and Medical Services. Issue 5 Indian JL & Legal Rsch.. 2022;4:1. [GoogleScholar]