

Ethical Consideration in the Use of Artificial Intelligence in Medicine and Healthcare

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Abstract

Artificial Intelligence (AI) in medicine and healthcare offers tremendous potential for improving patient care, increasing the precision of diagnoses, and increasing operational efficiency. To ensure responsible application, however, the swift uptake of AI technologies also brings up important ethical concerns that need to be addressed. This article explores various ethical challenges in healthcare AI, including concerns about algorithmic bias, data privacy, informed consent, and accountability. Patients must be aware of the implications of AI technologies on their care and how their data will be utilized by these systems, therefore informed permission is crucial. Concerns regarding privacy and security are brought up by the dependence on large volumes of sensitive data, which calls for strong security measures to guard patient data against intrusions. Another big problem is algorithmic bias, which can exacerbate health inequities by producing biased results if AI systems are trained on non-representative datasets in an unbalanced manner. Considering AI integration, the piece also looks at how healthcare workers' roles and responsibilities are changing. New ethical conundrums must be handled by clinicians while maintaining patient-centered treatment as the top goal. The current regulatory environment is also examined, emphasizing the necessity of revised regulations that consider the complexity brought about by AI technologies.

Keywords: Artificial Intelligence, healthcare, diagnosis, patients, data privacy

INTRODUCTION

Artificial intelligence (AI) is a major advancement in healthcare that offers creative ways to improve clinical decision-making, operational efficiency, and patient care. As AI technologies develop, they are being used more and more in a variety of healthcare settings, from administrative work and patient engagement to diagnostics and treatment planning. While these advancements offer significant benefits, they also raise crucial ethical concerns that must be tackled to promote the responsible integration of

AI in healthcare. By enhancing diagnostic accuracy, treatment approaches, and overall efficiency, AI has the potential to revolutionize patient care in medical settings. However, to assure responsible deployment, this technical progress raises important ethical considerations that need to be addressed. A key ethical principle in healthcare that gets more complicated with AI is informed consent. Patients need to be fully informed about the use of their data, especially when medical data is analyzed by AI systems. Making sure patients are aware of the consequences of AI being used in their care, particularly the possibility of algorithmic biases that could skew treatment results, is the difficult part [1]. Informed permission is required of healthcare providers, and patients can choose not to participate

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if they are uncomfortable with AI's involvement in their diagnosis. Because AI systems often depend on vast amounts of confidential patient information, ensuring data privacy and security is of utmost importance. Concerns regarding the collection, storage, and use of patient data are brought up by the possibility of data breaches and illegal access. To protect patient privacy, strong encryption and anonymization methods are necessary, but many healthcare institutions find it difficult to put these safeguards in place. Furthermore, to promote confidence between patients and healthcare professionals, ethical data handling demands transparency in the way AI algorithm's function and make judgments.

Building trust in AI technologies requires accountability and transparency. Both healthcare professionals and patients must understand the decision-making processes of AI systems. Lack of openness may cause people to doubt the efficacy and dependability of AI. To decide who is accountable when an AI system malfunctions or causes harm – the creators, medical facilities, or practitioners using the technology – clear frameworks for responsibility must be established. This accountability is essential for upholding public confidence in AI applications in healthcare as well as for ethical compliance.

Clinicians run the risk of becoming unduly dependent on AI systems as they assume more diagnostic and decision-making responsibilities, which could erode their clinical expertise. To manage the challenges of incorporating AI into their practice while preserving human oversight and empathy in patient care, healthcare workers must receive ethical training. In summary, while AI has the power to transform healthcare delivery, its ethical implications must be thoroughly evaluated. Promoting responsible use of AI technologies requires addressing concerns about algorithmic bias, data protection, informed consent, accountability, transparency, and the role of healthcare professionals [2].

To ensure that breakthroughs serve all patients fairly while maintaining core ethical values, policymakers and stakeholders must work together to create comprehensive ethical frameworks that direct the integration of AI into healthcare systems. Medical personnel are guided by the ethical standards of healthcare, especially when it comes to new technology like artificial intelligence (AI) in medicine. In order to ensure patient-centered care and shape ethical decision-making, four fundamental principles autonomy, beneficence, nonmaleficence, and justice are essential.

To sum up, these four ethical precepts – autonomy, beneficence, nonmaleficence, and justice are essential for negotiating the challenges posed by artificial intelligence in healthcare and medicine. Healthcare workers must uphold these values as technology develops to safeguard patient rights, advance wellbeing, prevent harm, and guarantee fair access to care. In a healthcare environment that is evolving quickly, striking a balance between these ethical issues will be crucial to improving patient outcomes and building trust in AI applications.

ETHICAL ISSUES IN AI AND HEALTHCARE

The incorporation of artificial intelligence (AI) in healthcare presents various ethical challenges that require careful consideration to ensure its fair and responsible use. Informed permission, algorithmic bias, data privacy and security, and the effect on various patient populations are important concerns. Building trust and making sure AI technologies improve patient care rather than jeopardize it need addressing these issues [3].

Informed Consent

To provide informed consent, which is a fundamental ethical principle in healthcare, patients must have a complete understanding of their treatment choices and the potential consequences of each option. Informed consent is becoming increasingly complicated as AI technologies proliferate. Patients need to be aware of the nature of the data being gathered and processed, as well as how AI systems will be used in their diagnosis and treatment. To protect their autonomy, patients should also be free to choose not

to participate in AI if it makes them uncomfortable. Making this information understandable to patients who might not have a technical background is the difficult part.

Data Privacy and Security

Healthcare institutions must adhere to regulations, such as HIPAA, to safeguard patient privacy and confidentiality. Patients should be made aware of their rights to access and control their personal information, while transparent data handling practices help build trust between patients and providers – an essential factor for the effective integration of AI. Privacy and security remain top priorities when implementing AI in healthcare.

Algorithmic Bias and Fairness

AI systems may generate biased results that negatively impact populations if they are trained on datasets that are not diverse or that do not appropriately reflect demographic groupings. This may exacerbate already-existing disparities by resulting in differences in healthcare outcomes and delivery. Using a variety of datasets while training AI algorithms and conducting frequent audits to evaluate accuracy and fairness are crucial for reducing this risk. In addition to being morally required, making AI technology egalitarian is essential to improving health outcomes for all populations.

Handling Sensitive Patient Information

Ethical dilemmas regarding data ownership may arise; stakeholders – including healthcare providers, technology companies, and patients – often have competing interests regarding how data is used. Clearly defining regulations for data ownership and usage can help navigate these complexities while respecting patient rights. Managing sensitive patient information ethically entails maintaining confidentiality while effectively utilizing AI technologies. To protect patient privacy, healthcare providers must establish clear protocols for data access, sharing, and storage, including determining who has the right to access patient data and under what circumstances [4].

Impact on Healthcare Professionals

As artificial intelligence (AI) technologies proliferate, it is critical to consider the ways in which these developments impact clinicians' ethical obligations and their practice.

AI can drastically change the jobs that healthcare professionals perform daily. AI frees up physicians to concentrate more on providing direct patient care by automating administrative and repetitive chores like data entry, appointment scheduling, and billing procedures. Because healthcare workers are relieved of time-consuming chores that take away from their primary goal of patient engagement and care, this change can result in increased efficiency and a decrease in burnout. AI can improve workflow efficiency, but it also changes the cognitive demands on medical personnel. Clinicians are frequently left to handle increasingly difficult cases that need for more sophisticated decision-making abilities as AI systems replace regular activities [5].

Healthcare professionals must learn how AI algorithms work, including their strengths and limitations, to make informed decisions about patient care and effectively communicate with patients about their treatment options. Because of this, they must improve their technical skills and stay up to date on advancements in AI technology to maintain their competence in an increasingly digital environment. The challenge is to ensure that healthcare professionals stay engaged and fulfilled in their roles while adapting to the evolving landscape of AI-assisted care. Additionally, the reliance on AI for diagnostic support introduces a new dimension to clinical practice.

Ethical Responsibilities of Clinicians

Healthcare workers' ethical obligations change along with their roles because of AI integration. Informed consent, data privacy, and algorithmic bias are just a few of the complicated concerns that clinicians must deal with. For example, healthcare professionals have an ethical duty to make sure

patients are properly informed about how AI technologies affect their care when using them for diagnosis or treatment planning. This entails addressing any worries patients might have about data usage and outlining how AI functions in decision-making processes.

Because patient data is sensitive, ethical guidelines regarding data handling must be strictly followed. Healthcare professionals must make sure that patient data is safe from unauthorized access and used responsibly within AI systems, and they also need to advocate for strong data protection measures within their organizations. Another important ethical responsibility for clinicians is to address algorithmic bias, which involves being aware of the possibility that biases in AI algorithms could result in unequal treatment outcomes for different patient populations. By actively participating in conversations about fairness and equity in AI applications, healthcare professionals can help reduce these risks and promote more inclusive practices within their institutions [6].

In conclusion, AI has a huge impact on healthcare workers, changing their duties and responsibilities and increasing their ethical requirements. It is crucial that physicians embrace new technologies while staying true to the fundamental principles of patient-centered care as they adjust to these changes. Healthcare workers may successfully negotiate the challenges of AI integration by giving ethical issues equal weight with technical developments. This will improve patient outcomes and preserve systemic trust.

REGULATORY CHALLENGES AND FRAMEWORK

Healthcare stakeholders must comprehend the current regulations governing the use of artificial intelligence (AI) technologies and the need for updated ethical guidelines as they become more integrated into clinical practice. The fast-paced growth of AI in healthcare presents major regulatory hurdles, necessitating the establishment of robust frameworks to guarantee its safe and ethical implementation.

Current Regulations Governing AI in Healthcare

To handle the difficulties presented by these technologies, several federal and state laws are being put into place as of 2025, changing the regulatory environment for AI in healthcare. Nearly 1,000 AI- and machine learning-enabled medical devices have received FDA approval, indicating a rising acceptance of AI uses in clinical settings. Pre-determined Change Control Plans (PCCP) guidance, which the FDA has recently established, describes how manufacturers should notify the agency of changes to AI systems and how these changes would be evaluated. The HTI-1 Final Rule, created by the Office of the National Coordinator for Health Information Technology (ONC), requires that developers of Certified Electronic Health Record Technology (CEHRT) establish risk management and disclosure protocols for AI technologies used in decision support interventions [7]. This regulation is in addition to FDA oversight. Additionally, healthcare providers are required by new state regulations, including California's AB 3030, to notify patients when they are interacting with AI systems and to provide opt-out options for interactions powered by AI. In a healthcare system that is becoming more automated, these rules seek to improve openness and safeguard patient rights. Many industry experts contend that despite these developments, existing regulations are unable to keep up with the quick development of AI technologies. Comprehensive governance frameworks that can adjust to the ever-changing landscape of AI applications while maintaining patient safety and ethical compliance are desperately needed. A balanced strategy that encourages innovation without sacrificing regulatory supervision is what stakeholders are demanding [8].

NEED FOR UPDATED ETHICAL GUIDELINES

Updated ethical standards that consider the complexity brought about by these technologies are desperately needed as AI continues to pervade healthcare. In the context of AI, problems, like algorithmic bias, data privacy, and informed consent, might not be sufficiently addressed by current

ethical frameworks. Traditional guidelines, for example, place a strong emphasis on informed consent and patient autonomy, but they might not be sufficient when patients engage with AI systems that use intricate algorithms that are beyond their comprehension. Furthermore, healthcare practitioners are faced with new ethical conundrums pertaining to accountability and duty as AI tools become more common in clinical decision-making. Determining culpability can be difficult if an AI system makes a mistaken recommendation that has a negative impact on patient outcomes. To maintain patient safety as the priority, updated ethical standards should make clear the roles and duties of clinicians while using AI technologies. Addressing algorithmic bias is also essential to advancing equity in the provision of healthcare. To guarantee that various populations are represented in training datasets, ethical principles must promote inclusive data methods. By doing this, the discrepancies in health outcomes brought on by biased algorithms will be lessened. In conclusion, managing the legal issues of AI in healthcare necessitates a multipronged strategy that incorporates both modern ethical standards and existing laws. Patient safety, openness, and equity must be given top priority as stakeholders strive to create comprehensive governance structures. In an increasingly digital environment, healthcare companies may build trust and improve the quality of care provided to patients by implementing strong regulatory frameworks and ethical standards that are adapted to the difficulties presented by AI technology.

Future Perspective of AI in Healthcare

AI's future in healthcare is set to drive groundbreaking advancements, yet it also demands thorough scrutiny of ethical concerns and regulatory structures. As AI technologies evolve, emerging trends in AI ethics and recommendations for ethical deployment will play a crucial role in shaping the healthcare landscape [9].

EMERGING TRENDS IN AI ETHICS

The growing emphasis on algorithmic accountability and transparency is one important trend in AI ethics. Understanding how these algorithms make decisions is essential to ensuring that AI systems function fairly and efficiently as they grow more complicated. Clear documentation of AI algorithms, including their training data and decision-making procedures, is being promoted by stakeholders. By giving patients information on how their care is being managed, this transparency not only empowers patients but also aids medical professionals in making well-informed decisions. The focus on equity and inclusion in AI applications is another new trend. To counter this, developers are urged to train AI models on a variety of datasets that fairly reflect different demographic groupings. This strategy seeks to reduce algorithmic bias and guarantee that AI technologies fairly benefit all patient populations. Additionally, patient-centred care is becoming more popular as a tenet for the moral application of AI in healthcare. This trend highlights how crucial it is to include patients in conversations about the use of AI technologies in their treatment. Healthcare professionals may build trust and make sure patients are at ease with the incorporation of AI into their treatment plans by placing a high priority on patient engagement and permission [10].

CONCLUSIONS

In summary, AI has the potential to greatly enhance patient outcomes and improve efficiency in healthcare. However, it is essential to proactively address ethical concerns by considering emerging trends and strategic implementation guidelines. By emphasizing transparency, fairness, patient involvement, and collaboration among key stakeholders, the healthcare sector can leverage AI's advantages while maintaining its commitment to ethical standards and patient-centered care. The integration of artificial intelligence into healthcare offers a transformative opportunity to optimize patient care and streamline clinical operations. Yet, to ensure its responsible and equitable use, it also raises critical ethical challenges that must be addressed. It is crucial to highlight the most important ethical challenges and issue a call to action for all parties involved in the healthcare industry as we wrap up this investigation of the moral dilemmas raised by AI in medicine and healthcare.

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