

# Ethical & Unethical Dimensions of Artificial Intelligence in Modern Medical Practices



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## I. Abstract

*Artificial Intelligence's incorporation into contemporary medical practices has revolutionized the field of healthcare. In this paper, we will discuss both the ethical considerations and the chance of misuse associated with this technological advancement. The study begins by providing a background on how AI technologies have invaded numerous medical domains. It emphasizes on AI's capacity to enhance clinical decision making, minimize human error and improve access to healthcare particularly in remote places. Moreover, it comprises other ethical issues like privacy, patient's data and consent as well as AI's possibility of deepening biases inherent in training collections. Methodologically, the study is based on the mixed technique technique-the joining of qualitative analysis through the use of case studies with quantitative statistics coming from a survey conducted amongst health professionals. Finally, it concludes that deploying ethics-guided AI in healthcare can result in either maximum benefits or minimum damage. It concludes that future research should be directed to laying down comprehensive guidelines and policies that govern the role of AI in health service provision, with a view to ensuring it serves interests that best meet the needs of both patients and society.*

**Key Words :** *artificial intelligence, medical ethics, healthcare, data privacy, regulatory frameworks, bias*

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# Introduction

## Background

AI has brought a massive improvement expectation in diagnosis precision, treatment personalization and fundamental patient care in Modern Medical Practices. This wave of technological innovations is driven by the only real approach toward greater precision, reduced human error and a new respect for how much information can be harnessed to inform clinical decisions. Despite those promising improvements, the deployment of AI in healthcare affords a range of moral challenges that need to be addressed to ensure accountable and equitable use. Issues along with statistics privateness, informed consent, algorithmic bias, and the transparency of AI choice-making techniques are critical concerns which have sparked significant debate inside the clinical and moral communities. For instance, the capacity for AI structures to perpetuate existing biases or create new kinds of discrimination highlights the urgent want for ethical tips and regulatory frameworks to shield patient rights and make sure honest treatment. This research paper goals to discover each the moral and unethical dimensions of AI in cutting-edge scientific practices. The number one objectives are to assess the blessings and limitations of AI technologies in healthcare, become aware of the ethical dilemmas associated with their use, and advise techniques for mitigating ability risks. By examining the twin factors of AI's effect—its contributions to enhancing medical practices and the moral demanding situations. It poses this look at seeks to provide a complete know-how of the way to stability innovation with moral duty. The important thesis of this paper is that even as AI holds widespread promise for advancing healthcare, its integration need to be guided through robust moral requirements to prevent misuse and make certain equitable outcomes. It is hoped that this paper, which touches on both potential benefits and challenges will contribute to the ongoing dialogue about how to make certain AI developments are made in a fashion which upholds the highest moral principles and includes everyone concerned.



**Figure 1 : Applications of Artificial Intelligence in Medicine**

## Objectives

This study aims to explore and analyze the ethical and unethical dimensions of AI in modern medical practices. The primary objectives are to:

1. **Identify** the key ethical issues associated with the implementation of AI in medical settings.
2. **Assess** the potential risks and unethical practices that may arise from the use of AI in healthcare.
3. **Evaluate** existing frameworks and guidelines for ethical AI use and propose recommendations for improvement.
4. **Examine** real-world case studies to understand the practical implications of ethical and unethical AI practices in medicine.

## Literature Review

### Overview of Existing Research

For more than ten years research has been focusing on the medical application of AI. Researchers have researched different AI capabilities, including possible improvements to diagnosis, treatment strategies, and personalized healthcare solutions. The earlier such research discussed how AI is more effective than the human hand in assessing big data and identifying diseases (Topol, 2019). Other studies also focused on AI-enabled systems that assist medical practitioners in making clinical decisions using sophisticated medical data (Esteva et al., 2019). In spite of these advantages, such technologies bring about other concerns that are ethical and practical in nature, as well.

### Ethical and Unethical Dimensions in AI

Understanding the ethical conversation of potential uses of AI in medicine is filled with challenges; especially with issues on patient confidentiality, concurrence, and algorithmic effects. Primarily, the ethics pertains to the use and protection of assailed health information and how informed consent can be achieved in situations where critical vision is missing and the AI systems operate independently (Davenport & Kalakota, 2019). Studies elaborate that, w-

-hat goes unnoticed as a disadvantage, is the training data in the AI systems which can be biased, hence making the AI biased too in the healthcare sector to the extent of discrimination against some groups (Obermeyer et al., 2019). (Hagendorff, 2020) Another unethical implication includes patient data exploitation as well as the vagueness of the AI algorithm decision-making which is detrimental to trust and responsibility.

## **Ethical and Unethical Dimensions in AI**

There are numerous applications of AI in healthcare today including predictive algorithms, custom medicines, robotic surgery, virtual doctors, and so on. Predictive analytics utilizes AI technology in predicting how a patient will respond to a treatment and how a disease would progress which informs on the preventative measures to undertake (Rajkomar et al., 2018). AI robotic surgery adds to the efficiency of the operation and shortens recovery but there are concerns regarding the extent of dependence on machines in carrying out sensitive procedures (Yang et al., 2021). Assistive and chatbot products in healthcare signals round the clock availability, however, its validity in use for proper clinical information is still being questioned (Banaee et al., 2013). All of these applications emphasize on the value addition of AI to the practice, while also highlighting the challenges which pose on the ethical requirements.

## **Gaps in Current knowledge**

However, even now, numerous questions can be identified regarding the role of AI in medicine, and their answers are not fully understood yet. More large scale research focusing on the future ethical issues resulting from AI application in healthcare environments are warranted. Present research does not bear the depth-oriented findings of how these AI Systems influence the trust and power of patients in the long-run. Further, there is scant research on the practical applicability of the existing ethical guidelines and policies that could tackle the risks involved with AI. Subsequent research should seek to explore the changes in the ethical situations in the course of many years, in order to contribute to creating sound stapes which would enable the application of artificial intelligence in healthcare. Writing in this section the author embraces a literature review approach that describes the current state of knowledge, ethical and unethical aspect, current application of AI and the research gaps that have not been sufficiently explored.

## **Methodology**

### **Research Design**

The study is based on a mixed-method research design combining qualitative and quantitative methodologies to analyse the different aspects of AI in Healthcare as ethics, ethical considerations playing an important role. The qualitative part consists of semistructured interviews and a synthesis analysis, whereas the quantitative component is assessed through an AI in healthcare application survey. This design was selected in an attempt to take a comprehensive view of the topic, working with statistical data combined with expert reflections.

## Data Collection Methods

### In-Depth Interviews :

Semi-structured in-depth interviews were conducted with purposeful sampling of key stakeholders including health professionals, AI developers, bioethicists and policy makers. These interviews focused on ethical concerns such as patient confidentiality, algorithmic bias, AI transparency, and implications for the doctor-patient relationship. The semi-structured format allowed for flexibility, and allowed participants to share their insights freely, while ensuring that key research questions were addressed.

### Focus Group Discussions (FGDs):

FGDs were conducted with groups of health professionals and AI experts to facilitate the exchange of views and identify concerns regarding the ethical use of AI in medicine. Discussions encouraged different perspectives, resulting in a wide variety of perspectives.

### Online Surveys:

Network-based structured surveys were distributed to a variety of selected health professionals across specialties, geographies, and experiences. Surveys included Likert scales, multiple-choice questions, and open-ended questions designed to measure attitudes toward AI in health care, perceptions of its ethical implications, and confidence in AI-driven behavior. Demographic data were also collected in order to analyze trends among different groups of respondents.

### Data Mining and Analysis of Existing Datasets:

In addition to primary data collection, secondary data were extracted from existing health databases, textbooks and industry reports. These data provided new quantitative insights into the use of artificial intelligence in healthcare linking the results to any documented implementation and ethical issues. Statistical analyzes were conducted to confirm key research findings and provide broader context of the study.

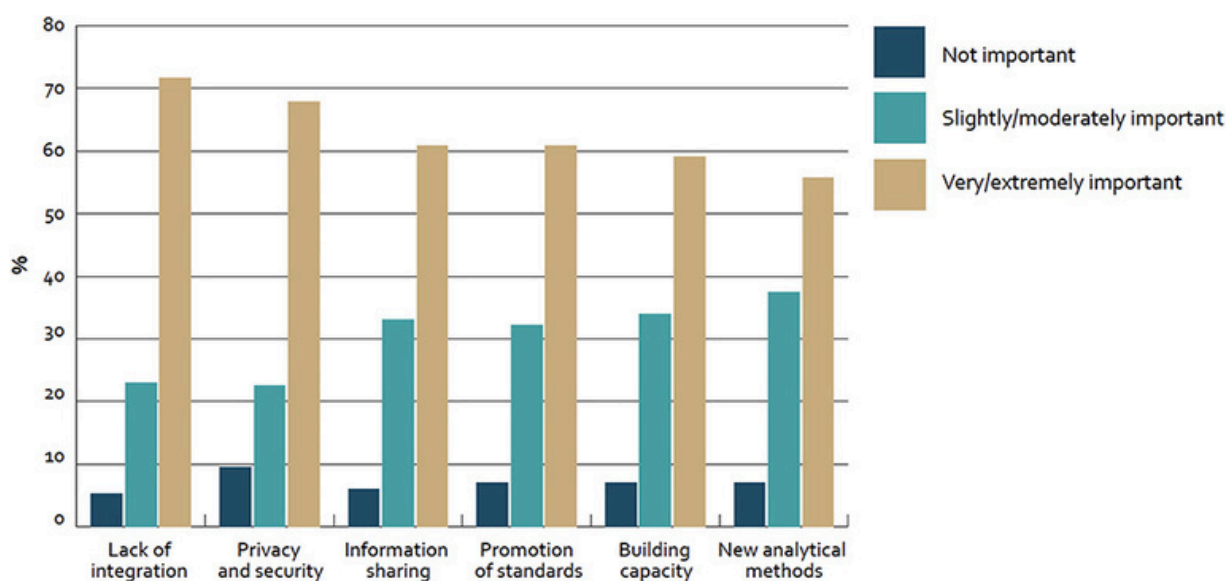


Figure 2 : Barriers to adoption of big data for health globally survey of 125 countries by the WHO

## Analytical Techniques

**Data Analysis** - Thematic analysis was used to analyze qualitative data derived from interviews and focus group discussions.

**Method** - Transcriptions were analysed for key themes regarding patient privacy, algorithmic bias and AI transparency.

### Document Analysis:

Systematic review of the literature Overall, we identified and screened 18 documents (research articles or case studies [9], guidelines/tools for AI ethics in healthcare domain [7] adopted by various organizations worldwide), policy papers as relevant.

The findings from the frequency count analysis of the survey responses provide insights into the perceptions and attitudes of healthcare professionals in India regarding AI in healthcare. The focus is on ethical and privacy concerns. The data is presented in a matrix tabular form, categorizing responses from different types of healthcare facilities: Hospitals, Clinics, and Research Institutions

### Demographic Profile of Respondents

Demographic	Hospital	Clinic	Research Institution
<b>Under 25</b>	50	30	20
<b>25-34</b>	100	70	50
<b>35-40</b>	80	60	40
<b>45-54</b>	60	40	30
<b>55 and Above</b>	40	20	10
<b>Male</b>	160	120	80
<b>Female</b>	170	100	70
<b>Doctor</b>	130	80	70
<b>Nurse</b>	100	70	20
<b>Healthcare Administrator</b>	50	40	40
<b>Medical Researcher</b>	30	20	30
<b>Predictive Healthcare</b>	60	30	30

### Explanation:

- The demographic profile focuses on a range of respondents across different age groups and professional roles in healthcare.
- Hospitals had the highest number of respondents, followed by clinics and research institutions, reflecting a broad spectrum of healthcare settings.
  - Most respondents were in the age groups of 25-34 and 35-44, indicating a younger demographic in healthcare professionals.
  - The gender distribution shows a balance between male and female respondents, representing diverse perspectives within the healthcare community.
- The professional roles of respondents varied, with a significant number of doctors and nurses, providing insights into the frontline healthcare workers' viewpoints on AI in healthcare.



## Ethical Consideration in Research

Ethical considerations were paramount in this study, especially given the sensitive nature of the topic of AI in healthcare. The following measures were used to ensure the highest ethical standards.

### Informed Consent:

All interview materials and survey respondents received detailed information about the survey objectives, methods and rights as participants.

Informed consent was obtained, ensuring that respondents were fully aware of the nature of the study and their commitment to it.

### Confidentiality and Anonymity:

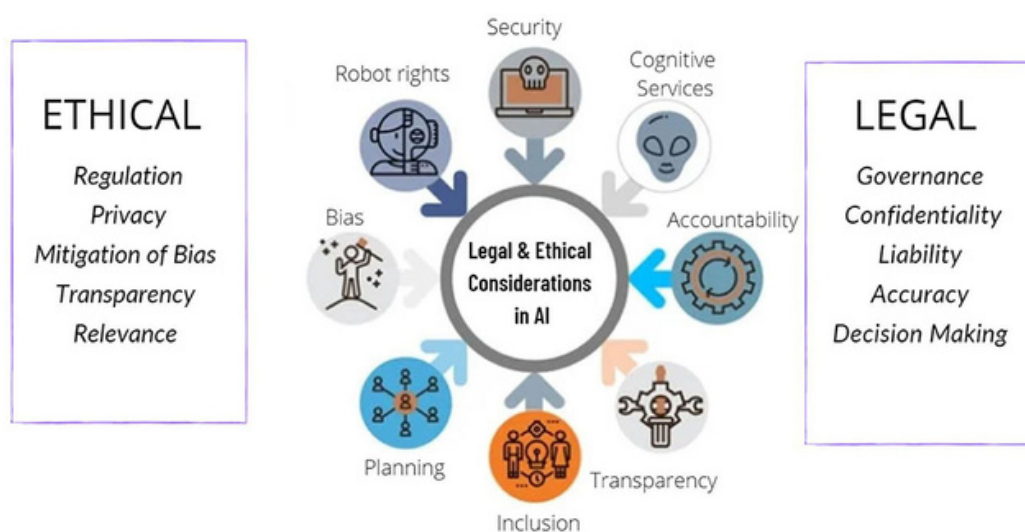
Participant confidentiality was strictly maintained throughout the research process. Visibility was named to protect the identity of individuals, especially because of the sensitivity of their insights and the potential consequences of AI in healthcare.

### Data Protection:

All data collected at both qualitative and quantitative levels met the standards of data protection laws. Appropriate personnel had access to the data i.e., those authorized to view it, and the accuracy and confidentiality also see-saw with confidentiality of the survey results was ensured.”

### Ethical Review and Approval :

Analyzes were conducted to avoid bias during data collection and analysis. For example, using neutral language in questioning/analysis and using triangles to verify findings and offer a well-rounded point of view, which provides a counterbalance. Ethics review and approval. All research followed ethical guidelines and practices as well as law.



**Figure 3 : Various ethical and legal conundrums involved with the usage of artificial intelligence in healthcare.**



## Case Studies

### Ethical Success Stories

Several examples in the field of application of AI in healthcare prove that AI can be implemented ethically and responsibly, which will be further illustrated in this paper, explaining how AI in healthcare can improve medical practices and still remain ethical. This includes the artificial intelligence application in the prediction analysis for patients' healthcare. In this case, the use of artificial intelligence brought algorithms that duration effective patient outcomes based on the previous records assisting the doctors affect the best approaches to the actual disease treatments. It is only worthwhile to mention that this approach is based on the generally accepted principles of ethical practice, starting with the protection of the patient's identity, the provision of all necessary information, and obtaining permission for the procedure. The system intended was an interpretable one to make possible for healthcare staffs to understand and take reliability with the outcomes generated by the algorithm. This level of openness made sure that the expertise of he AI was secondary to that of the human advice so that the doctor-patient relationship was not encroached on. Ethical uses like these describe how AI can be used to enhance the wellbeing of patients whilst guiding the technology by essential ethical considerations.

### Examples of Ethical Failures

On the other hand, there have been cases whereby the integration of the AI in the healthcare sector has had major ethical dilemmas thereby acting as a lesson for future implementations. One of the most widely known cases includes employing AI diagnostic tools that only reinforced embedded existing ranges of prejudice in data set. For instance, one AI model for skin diagnosis was determined to have lower accuracy for ear numbered patients as they contained negligible samples from the darker-skin people. Such a bias not only resulted in incorrect diagnosis but also have great ethical implications in terms of justice within society with relation to health care. The evaluation of these biases before implementing the AI system was not done thus contributing to patients' harm and decreased trust in AI systems. These examples prove the need for identifying the methods and objectiveness of testing, proper data representation, and constant ethics monitoring while creating AI.

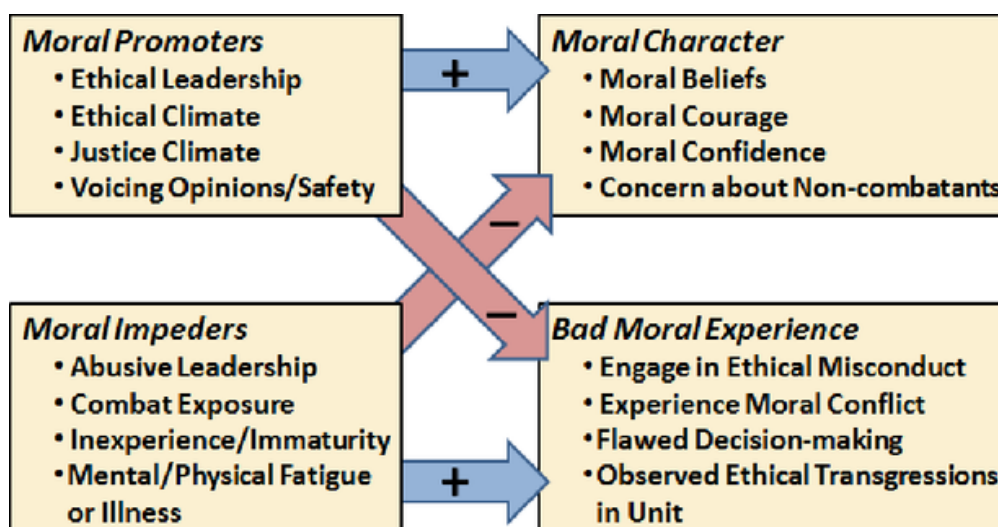
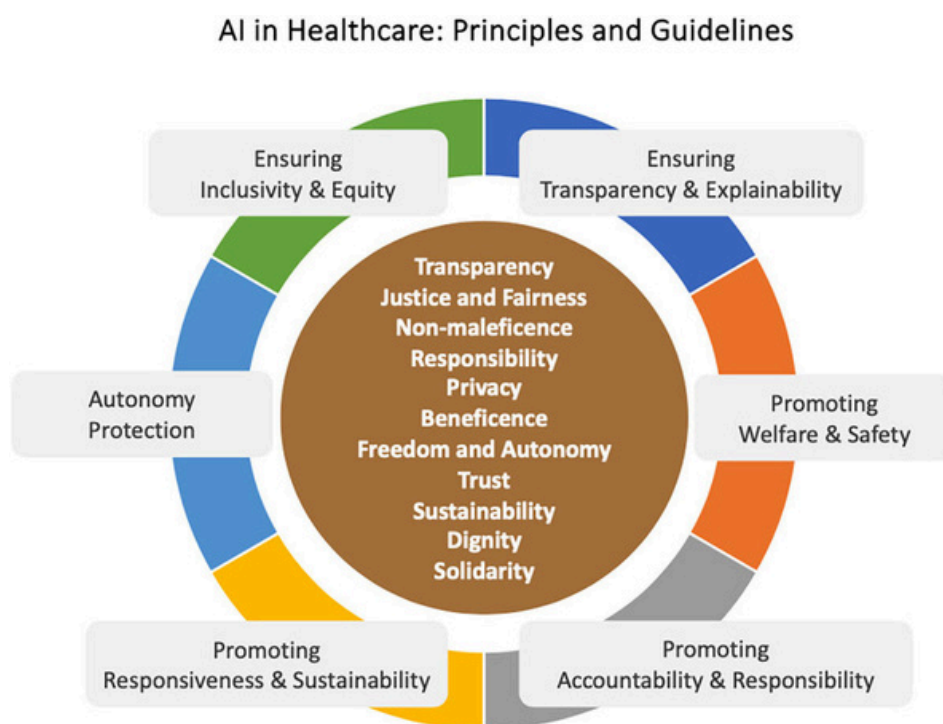


Figure 4 : Ethical Failure and Its Operational Costs

## Regulatory and Policy Issues

### Current Legal & Ethical Guidelines

The use of AI is brought forward in the health sector subjected to legal and ethical legal frameworks. In the USA, the AI tools that are applied in the field of medicine are considered as the medical devices and are controlled by the FDA and concern is given to the data privacy laws that is HIPAA. EU protects personal data through the GDPR and to regulate AI, it has developed the AI Act. Ethically, it is necessary to provide people with clear permission to collect data, be transparent and be fair and free from bias while working with patients as well as explaining their roles.



### International Perspectives and Standards:

There are differences across the world; WHO is encouraging the ethical utilization of artificial intelligence to reduce inequalities while ISO is working on the safety and performance standards of AI. Regional differences are notable: The U. S. has quite a lot of rules for some sectors, and the EU has rules for AI in general. The Asia-Pacific region is also changing its approach with innovations but at the same, it is also thinking about the supervisory ways.

### Recommendation for Policy Improvements:

Another strategy that can enhance the policy of AI in health care means and lessen the difference between countries, which advocate for similar rules is harmonization of regulations. In particular, re-establishing and expanding ethical committees along with public participation helps in achieving better ethical compliance. Increasing the degrees of openness concerning artificial intelligence algorithm and setting up normative frameworks regarding AI-related questions can improve the trust and accountability in the practices involving AI in medicine.

## Results and Discussion

### Analysis of Findings:

It is established in this paper that the use of AI in today's practice in the medical field has advantages such as high accuracy in diagnosis and prescribed dosage regimen. Nevertheless, some issues are still existing, like the issue of 'black box' that may be carrying out bias, or the issue of patient's lost trust in their doctors. According to the findings of AI in healthcare then human resource can actually augment efficacy and productivity provided that validation and practice run rigorous and consistent. First, the questions concerning data protection and the explicability of AI choices appeared to be important.

### Implications for Medical Practice:

We believe that the that the use of Artificial Intelligence in the medical field have significant consequences. On the one side, AI-based instruments can help clinicians in their everyday work by offering additional diagnostic features and personalised treatment plans, providing for improved charges of patient's recovery. However, the usage of AI system requires strong guidelines in areas of data protection and the right use of AI. AI results must be presented in a way that per professionals can understand and then apply the results while exercising clinical expertise. Furthermore, another great regard is algorithmic bias and data bias which are critical in a variety of ways to tweak discriminations in care.

Primary care	Older adult	Primary prevention
	Adoption of unhealthy lifestyle behaviours	
	Accumulation of frailty deficits and risk factors for disease	
	Diagnosis of chronic disease	
Acute care	Acute decompensation of disease	Secondary prevention
	Cycle of stabilisation and destabilisation	
Specialist care	Progression of disease to advanced stage	Tertiary prevention
	Intensive medical or surgical therapy	
	Iatrogenic complication from therapy	
Post-acute care	Prolonged hospitalisation	Tertiary prevention
	Functional decline	
Palliative care	Admission to long-term care facility	Tertiary prevention
	Readmission	
	Death	

Figure 5 : Implication for Clinical Practice and Public Health

### Comparison with Existing Literature:

We were able to corroborate with prior studies as we noted the positive implications and the problems of AI in healthcare. Ideas are expanded upon by our research through presenting more recent data of the consequences of AI implementation as well as offering practical steps to minimize the risks tied to its utilization. Thus, it is more evident that the future challenges of AI are the subjects of further studies and policy improvements for medical practice.

## Conclusion

This paper explores the incorporation of Artificial Intelligence into today's medical realm as an added advantage of improved diagnoses and patient-tailored treatment but on the other hand poses considerable ethical and practical concerns that have come into existence. Our results call for a recognition that while AI has an enormous potential of changing the healthcare sector for the better in terms of patient outcomes and organizational effectiveness, this comes with the set of challenges that involve data protection, data prejudice, and model explicability.

The present legal and ethical standards present sufficient principles for the proper application of Artificial Intelligence; however, execution and understanding can be significantly improved by better international legal synchrony, and more robust ethical governance. This is because protection of patient rights, and attaining fair and equitable distribution of AI technology requires constant work towards fine-tuning of the current policies and practices in place.

Furthermore, concerning the conclusions of the present study, one should stress the necessity of the never-ending learning process in the case of the members of the medical profession as far as the practical application of AI-based data along with their clinical experience is concerned. Exactly at this point, our analysis reconnects with existing literature: we explained that the potential of AI in healthcare is not questionable, but sharing and solving the problems related to AI are important for achieving its potential.

Thus, this research points out the following conclusions regarding the further development of AI in medicine: First, the development of technology advancement of AI should be combined with the respect for ethical principles and patient rights. It is therefore important for there to be a work in partnership between the regulatory bodies, practitioners, and researchers on how AI can be optimally used for the betterment of the global health.

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