Legal Issues and Challenges of Artificial Intelligence Technology in International Healthcare System: What Doctors and Patients Say

Isroni Muhammad Miraj Mirza*, Agit Yogi Subandi and Ananda Melania Prawesti
Faculty of Law, Universitas Lampung, Bandar Lampung, Indonesia

Keywords: AI, Medical, Innovation.

Abstract: Medical advancements are a major source of hope for the community. Nevertheless, for society to profit from medical advancements and minimize their risks, comparable advances are probably needed in governance domains including law, policy, and ethics. Researchers from a range of disciplines are voicing concerns about the possible legal ramifications of health-related breakthroughs that might call for governmental responses as AI develops quickly. As a result, the purpose of this essay is to investigate how physicians and patients view that specific issue. This study employs a social-legal framework and the systematic review method to examine the application of AI. in the medical industry in an appropriate and fair way. More precisely, in an effort to search for and establish international standards surrounding the use of artificial intelligence in the healthcare system, this research examines the literature that is already available using a combination of social, technological, and legal review technique based on the existing legislative instruments. These viewpoints could offer insightful information on the most pressing problems that will impact and enable upcoming regulatory reform. Regretfully, there isn't a thorough summary of the research on legal issues pertaining to innovations in the health sector at this time. Put another way, the findings of this research indicate that, despite continued advancements in technology, there isn't a single, cohesive worldwide regulatory framework that regulates the application of AI in the medical domain. As such, the international community still faces problems and difficulties. The study's findings demonstrate the necessity for a common legislation controlling AI in healthcare to be more precisely tailored so as to at least safeguard the interests of all participating governments.

1 INTRODUCTION

Artificial intelligence (AI) in medicine has the potential to revolutionize medicine, but regulations must be in place to ensure proper implementation and minimize risk. Health-related AI has been one of the most discussed areas of AI in medicine. People are discussing how AI could improve healthcare systems by improving diagnoses, streamlining healthcare, or reducing human bias (E Topol, 2019). Artificial intelligence (AI) is emerging as a highly influential tool in the health sector that can not only address the need but also make it easier for people working in these fields where the lack of service towards society becomes the main focus. AI can analyze large volumes of medical data, recognize patterns, and provide relevant insights (Sanhaji, 2023). One of the AI technologies that can take over the role of CRM can't serve 24 hours, but this can be done with AI, which is known as Chatbot technology. Chatbots can automatically respond to questions asked by AI technology (Devianto Y, 2020).

Yet, there are also worries that AI could exacerbate preexisting racial or social biases, undermine transparency, make it more difficult to deskill healthcare professionals, harm the relationship between the patient and the provider, or produce algorithmic bias that will be difficult to identify. Naturally, there are differing perspectives on the matter. Artificial intelligence (AI) has many potential applications, but many people are cautious about its broad adoption. These concerns highlight the necessity of regulatory or other governance structures (legal, political, ethical) that allow nations to maximize AI's advantages while minimizing its risks.

Artificial Intelligence (AI) tailored to the health sector will engage with the legal system in a number of ways. First, there are concerns about whether current laws will address the problems linked with AI

Mirza, I. M. M., Subandi, A. Y. and Prawesti, A. M.
Legal Issues and Challenges of Artificial Intelligence Technology in International Healthcare System: What Doctors and Patients Say.
DOI: 10.5220/0013087100003873

In *Proceedings of the 1st International Conference on Medical Science and Health (ICOMESH 2023)*, pages 11-16
ISBN: 978-989-758-740-5

that are specific to health, such as the following (Da Silva, 2022):

1. AI is not immune to error, whether in the areas of self-regulation or accreditation, medical device regulation, monitoring the observance of product liability rules, or medical malpractice laws.
2. It is appropriate to think about the suitability of current rules for assigning blame for medical errors in which an AI tool suggests—or even performs—a course of treatment that is harmful to health. It is also important to think about how liability should be distributed among medical professionals, AI developers, and manufacturers.
3. Can the problem of AI algorithms that arbitrarily provide different results to groups that have historically been less prosperous truly be addressed by the laws now in place against discrimination and human rights?
4. Are there enough privacy laws in place to protect patients, considering the need for AI to analyze massive quantities of data and machine learning systems, for example, that gather data in real time?
5. Will the laws and regulations governing data governance already in place be adequate to give AI inventors representative training data sets that accurately represent historically underrepresented populations?
6. Will the regulations governing informed consent today be adequate to protect people when medical professionals choose to use artificial intelligence (AI) to diagnose and treat patients?

There is a dearth of thorough knowledge regarding the legal obstacles presented by health-related artificial intelligence (AI), despite the fact that law is essential to the effective application of AI in healthcare settings.

2 RESEARCH METHOD

In this study, systematic review methods are used with a qualitative approach and a mix of technical, sociological, and juridical normative approach. During this method, relevant research will be analysed by looking at whether there are existing laws that specifically regulate the use of AI within the healthcare system to ensure justice and its implementation on the ground. If there are no existing laws, then how can the existing law regarding the use of AI in the case of a medical science legal dispute be applied? In this context, from the sociological, legal, and cultural perspectives, researchers will collect data on problems, difficulties, conditions and behaviours in society, and the lawfulness of AI in order to have effective law enforcement within the medical field.

3 RESULT

3.1 Aritificial Intelligence

The phrases "problem solving" and "search" in artificial intelligence refer to a group of concepts pertaining to inference, conclusion, planning, common sense reasoning, proof theorems, and associated procedures. Programs for natural language comprehension, information retrieval, robotics, automatic programming, text analysis, game play, expert systems, and mathematical theorem proof are common uses for this concept. Artificial intelligence is a field of study that uses intelligence agents to perceive their surroundings and display relevant actions (Astuti, 2020).

3.2 Digital Transformation

When multiple digital innovations come together, new actors (and actor constellations), structures, practices, values, and beliefs are introduced into organizations, ecosystems, industries, or fields. These new actors alter, threaten, replace, or supplement the established rules of the game. This process is known as digital transformation (Kraus, 2021). There is a significant chance that artificial intelligence (AI) may help achieve the Sustainable Development Goals (SDGs). Some people are concerned that their human rights, including the freedom of speech, the right to privacy, the right to data protection, and the right to discrimination, are being violated, even while technology is being used to address many of society's most urgent issues. AI-based technologies provide tremendous opportunities if they are developed in line with global norms, ethics, and standards and are founded on principles that prioritize human rights and sustainable development.

3.3 Artificial Intelligence and Healthcare

Artificial intelligence has aided in the development of wearables and medical gadgets that track vital signs and gather patient data in real time. These gadgets provide early health issue detection and remote

patient monitoring when paired with AI algorithms. AI can assist medical professionals in anticipating issues and recommending the best course of action for a patient. For example, AI can more quickly and accurately recommend to a patient the best course of action or prescription. Healthcare professionals can now identify previously unidentified relationships between diseases and healthcare data, or they can identify minute changes in a patient's vital signs that may be a symptom of an issue, thanks to artificial intelligence in the form of machine learning.

3.4 Legal Issues of Artificial Intelligence in Healthcare System

The future of human civilization could be influenced by the exponential expansion of artificial intelligence (AI) in a number of ways. Artificial intelligence (AI) has the ability to perpetuate or even worsen bias and discrimination in the decision-making process, even though it is a machine created by human intelligence. Laws and regulations will be required to guarantee the fairness and impartiality of AI systems, and those who have experienced prejudice will have redress options. One of the disadvantages of AI in this context is that it can give rise to privacy and ethical concerns when applied to healthcare systems.

The data suggests that AI models have the power to significantly introduce and magnify social and human biases. But rather than the algorithm itself, the underlying data is ultimately to blame for this. Data reflecting human decision-making or the second-order effects of historical or societal inequality can be used to train models. Furthermore, bias may also be influenced by the way that data is gathered and used. Moreover, bias could arise from the feedback mechanism that user-generated data uses. Although there aren't any official criteria or guidelines for reporting and comparing these models just yet, future study should take this into account to help researchers and doctors (Nelson GS, 2019).

In the context of regulatory control of AI interactions, the question of legal liability for AI operations is critical. The example of IBM Watson, a supercomputer, prescribing wrong cancer therapies and exacerbating the patient's condition, highlights the importance of this issue.

The ramifications of giving Artificial Intelligence (AI) access to patient data at the municipal, state, or federal levels rather than the international level must also be taken into account. This calls for taking into account biological differences across patient groups (older adults, children, etc.) as well as medical ethical requirements (Laptev, 2021).

All citizens—including doctors—are entitled to equal treatment under the law, even though they can face criminal charges. Nevertheless, criminal activity by itself does not provide enough evidence to prove criminal responsibility. It's simple to use artificial intelligence (AI). Criminal conduct will continue if a system acts in a way that encourages it or if there is a legal requirement (Hallevy, 2010).

There must be a criminal mindset associated with it. The essence of criminal guilt is directly addressed by criminal attempt. Since no doctor is expected to purposefully damage a patient, the issue of "mens rea" has come up for debate in medical malpractice cases. For instance, in Indonesia, criminal prosecution will only occur for actions that are deemed unlawful under a criminal code or other criminal legislation (Hall, 1940).

3.5 Challenges and Future of Artificial Intelligence in International Health Care System

As artificial intelligence (AI) progresses from a "nice to have" to a vital part of contemporary digital systems, it is more crucial than ever to make sure that AI is capable of making morally correct decisions that are free from bias. We acknowledge the need for transparent, intelligible, and responsible (Responsible Artificial Intelligence (Rabi) systems). AI systems will probably eventually outperform humans in some areas as they are used more and more to improve surgical outcomes and patient guidance. AI is likely to surpass, coexist with, or replace current systems, ushering in the AI era of healthcare; failing to do so could be unethical and unscientific (Parikh, 2019).

In order to ensure the correctness and objectivity of AI applications, medical legal customs must be systematized and made available to AI services. The rules and regulations governing the application of artificial intelligence (AI) technology, including robots, AI hospitals, and cyborg-AI doctors, will mostly depend on national legal customs. The development of transnational AI (such as an AI-Cloud-Doctor) will thus require the establishment of an international repository of medical legal treaties that have been ratified by all participating nations.

The legislation governing the use of artificial intelligence (AI) technology is still being developed at this time. The creation and acceptance of strategic (legal) guidelines for the widespread deployment of AI technology is the main priority for states. When creating, implementing, and using AI technology, it is appropriate to take into consideration the following principles, given the legal framework for its use in

healthcare has not yet been established (Parikh, 2019):

1. Individuals should be allowed to make decisions about their own health;
2. Sensitive information and patient privacy need to be protected.
3. When applying AI in healthcare, developers of the technology should ensure that it satisfies specific safety, accuracy, and efficiency requirements.
4. It is important to apply Artificial Intelligence (AI) technologies in a fair and equitable manner.
5. The enforcement of educational initiatives aimed at providing medical staff with the know-how and abilities required to apply artificial intelligence technologies.
6. The rationale behind the use of artificial intelligence (AI) technology in transparency.

The problem of human resources will be the biggest obstacle to the application of artificial intelligence in medical practice. The entity that will communicate with robotic systems and artificial intelligence is the human. The goal of AI and emerging technologies is to make human activities easier. Artificial Intelligence can solve a range of Human Resource problems when used to the medical field (Hakim, 2021).

At least three significant HR challenges will face medical professionals in the next years: a worldwide physician shortage, an aging and overburdened medical workforce, and a rise in long-term care needs. The caliber of the system's medical personnel is essential to its effectiveness. An further significant concern is the aging of medical professionals, with an estimated 17.4 million medical practitioners needed globally.

Quality healthcare cannot be delivered without a skilled medical practitioner, as the world's people resources continue to grow. Many human resource problems can be resolved in the healthcare industry by implementing state-of-the-art technologies (Devianto, 2020).

Better treatment delivery will result from the presence of top-notch medical specialists. Medical professionals will find it easier to do their jobs with the help of Artificial Intelligence (AI) as a "cognitive assistant" that can analyze and understand data and has a broad range of clinical experience. AI as a cognitive assistant, for instance, might be able to recognize medical disorders by analyzing radiology pictures (Hiadayat, 2021).

Artificial Intelligence (AI) has the potential to help medical professionals make more accurate diagnoses, streamline administrative processes, improve decision-making, and analyze vast amounts of data. Additionally, using AI could offer ways to improve healthcare accessibility. Artificial intelligence does not, however, fully replace human intervention; empathy, clear communication, and human connection are still crucial components of treatment. In the end, nothing—not even apps or technology—can replace interpersonal relationships and trust.

The human doctor will always be necessary, but artificial intelligence (AI) has the potential to be a very useful cognitive helper. Furthermore, the emergence of digital health holds promise for changing the conventional doctor-patient dynamic into an equal collaboration (Huss, 2018).

While it can be challenging to get AI models to function in medical settings, the clinician interacting with the robot and AI has much greater challenges. There are two main difficulties that arise when it comes to the risk of AI in healthcare: first, using AI in healthcare or medical practice can be dangerous. Negligent insiders are healthcare professionals who disregard the law when it comes to gaining access to and using patient data, whereas hackers are outside hackers.

There is a technological barrier to the application of artificial intelligence (AI) in the healthcare industry. AI needs to be controlled and supervised by a qualified healthcare practitioner and technologist in order to be effective. An human with health understanding should oversee AI operations to ensure correct data entry and appropriate health practice monitoring. The main goal of healthcare automation should not be obscured by the possibility that it falls under the category of AI or healthcare data technology. Humans have historically formed intimate bonds with people who are thought to have more or less knowledge or competence (Terry, 2017).

Currently, there isn’t any international treaty or convention that establishes a set of broad guidelines for the application of AI technology, especially in the medical field. Only a small number of recommendatory texts have been ratified to serve as the foundation for international legal supervision in the field of artificial intelligence. Among these documents are:

1. The "Okinawa Charter" on the Global Information Society was released during the G8 Kyoto Summit Meeting (G8 2000) in Kyushu-Osaka, Japan. It called for the establishment of a regulatory framework to encourage cooperation in order to enhance international networks and reduce the digital divide.

2. At the Council's Ministerial Level on May 22, 2019, the World Economic Forum (WEF) and the Council of the European Economic and Social Council (ECOSOC) agreed the first Intergovernmental Standard on Artificial Intelligence, also known as the OECD Council Recommendation (Artificial Intelligence 2019). The statement offers suggestions for national governments to consider while developing artificial intelligence and lays out broad rules for its deployment.
3. At the G20 Trade and Digital Economy Ministerial Statement (2019, Japan), the G20 Secretary-General adopted the principles for the advancement of artificial intelligence (AI) on behalf of the member states of the Group of Twenty (G20).

The significance of international technological standards in relation to international legal regulation must also be emphasized. The work of the international standardization bodies (ISO, IEC, and ITU) leads to the creation and publication of international standards. These groups develop and distribute technical papers, standards, guidelines, and recommendations.

4 CONCLUSION

Healthcare workers can now provide care more effectively, with greater awareness, precision in identifying potential problems, early disease diagnosis, and use of the most recent interventions thanks to the use of cutting-edge Artificial Intelligence (AI) tools. Nevertheless, in an effort to establish worldwide standards on the use of AI in the healthcare system and minimize risks—particularly health risks—legal issues also need to be addressed concurrently on a global scale.

Artificial Intelligence (AI) has to be held to a very high standard of moral accountability as it is used in healthcare even more these days. To prevent data bias, appropriate algorithms that are based on objective real-time data must be used. It is imperative to carry out regular audits of the algorithms, including their integration into the system, and to promote diversity and inclusion in programming groups. While AI might not completely replace clinical judgment, it might help doctors make wiser choices. AI can be used, for instance, to conduct screening and assessment in situations when medical expertise is scarce.

In contrast to human decision-making, all AI decisions—even the quickest ones—are methodical since algorithms play a part in the process. As a result, even in cases where the activities have no legal ramifications (since effective legal frameworks are still lacking), they inevitably lead to accountability—not for the machine itself, but for the people who created it and the people who use it. Artificial Intelligence is likely to replace or coexist with current systems, even though there are ethical and scientific concerns. This will bring about the era of AI in healthcare, and it would be regarded as being unethical and unscientific for not using AI.

REFERENCES

Astuti, Fitri Andri 2020, *Pemanfaatan Teknologi Artificial Intelligence untuk Penguatan Kesehatan dan Pemulihan Ekonomi Nasional,* Jurnal Sistem Cerdas, Vol. 4, No. 1

Barr, Avron and Feigenbaum. 1979. *Handbook of Artificial Intelligence.* Stanford University: https://stacks.stanford.edu/file/druid:qn160ck3308/qn160ck3308.pdf

Campbell, James et al., *A Universal Truth: No Health without a Workforce, World Health Organization (Geneva, 2013)*, accessed August 4 2023, http://www.who.int/workforcealliance/knowledge/resources/hrhreport2013/en/.

Devianto, Y., & Dwiasnati, S. 2020*. Kerangka Kerja Sistem Kecerdasan Buatan Dalam Meningkatkan Kompetensi Sumber Daya Manusia Indonesia*. Telekomunikasi, Vol. 10, No. 1

E, Topol. 2019. *Deep medicine: how artificial intelligence can make healthcare human again*. New York: Basic Books;

E. Topol*, 2019 High-performance medicine: the convergence of human and artificial intelligence*. Nat Med. Vol;25:

Human Resources, Health Workforce Requirements for Universal Health Coverage and the Sustainable Development Goals (Geneva, 2016), accessed August 5th, 2023, https://apps.who.int/iris/bitstream/handle/10665/250330/9789241511407-eng.pdf.

Hiadayat, A Y, and A S Purnomo. 2021, *Sistem Pakar Diagnosis Gejala Penyakit Turbekulosis Dengan Metode Dempster-Shafer; Studi Kasus : UPTD Puskesmas*." KONSTELASI: Konvergensi Teknologi Dan Sistem Informasi 1, no. 2

Hallevy, Gabriel, 2010, *The Criminal Liability of Artificial Intelligence Entities - from Science Fiction to Legal Social Control,* Akron Intellectual Property Journal 4, no. 2

Hall, Jerome, 1940, *Criminal Attempt. A Study of Foundations of Criminal Liability*, The Yale Law Journal 49, no. 5

Hakim, Hary Abdul, Chrisna Bagus Edhita Praja, et., all, 2021, *The Urgency On Designing The Legislation For The Use Of Artificial Intelligence In Indonesian Medical Practice*, Jurnal Penelitian Hukum De Jure Vol. 21 No. 4

Huss, Mikael, 2018, *Challenges of Implementing AI in Healthcare,* Peltarion, accessed August 6, 2023.

Kraus, Sascha and Paul Jones, et all, 2021, *Digital Transformation: An Overview of the Current State of the Art of Research,* Sage Journal, Vol. 11, No. 3

Lucente, Ida, 2018, *Tackling Privacy and Security When Building AI in Healthcare*, DZone, accessed August 4, 2023

Laptev, Vasiliy Andreevich and Inna Vladimirovna Ershova, and Daria Rinatovna Feyzrakhmanova, 2021. *Medical Applications of Artificial Intelligence (Legal Aspects and Future Prospects),* MDPI, Laws 11: 3.

Nelson GS. *2019. Bias in artificial intelligence.* North Carolina Med J. 80:220–2. doi: 10.18043/ncm.80.4.220.

Parikh, Teeple S, Navathe AS. 2019, *Addressing bias in artificial intelligence in Health Care*. JAMA. 322:2377. doi: 10.1001/jama.2019.18058

Sanhaji, Ganis and Amirul Irsyaad Hizbullah, 2023, *Pemanfaatan Artificial Intelligence Dalam Bidang Kesehatan*, Edusaintek: Jurnal Pemanfaatan Sains dan Teknologi, Vol. 11, No. 1

Silva, Michael Da, Tanya Horsley, et,. all, 2022 *Legal Concerns In Health-Related Artificial Intelligence: A Scoping Review Protocol*, Systematic Reviews

Shah M, Naik N, Somani BK, Hameed BMZ. *Artificial Intelligence (AI) in urology-current use and future directions: an itrue study*. Turk J Urol. (2020) 46(Suppl. 1):S27–S39. doi: 10.5152/tud.2020.20117

Terry, Nicolas, 2017, *Appification, AI, and Healthcare's New Iron Triangle,* Journal of Health Care Law & Policy, Vol. 20