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Optimization of Health Service Facilities Through Intelligence Artificial Viewed from the Legal Perspective of Positivism

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ABSTRACT

Background. The use of Artificial Intelligence (AI) in Indonesia's healthcare sector presents an innovative solution to address challenges such as limited healthcare facilities and a shortage of medical personnel. In line with Article 4, Paragraph (1), letter c of Law No. 17 of 2023, every individual has the right to receive safe, quality, and affordable healthcare services. For AI to be successfully integrated into healthcare, it must align with legal principles based on positivism, with clear regulations to ensure accountability, security, and the quality of services provided.

Purpose. This study aims to analyze the role of AI in optimizing healthcare facilities and improving the performance of medical personnel in Indonesia, while also exploring the legal challenges that arise in the use of AI in healthcare from the perspective of positivist law.

Method. This research adopts a normative juridical approach, utilizing both a legislative approach and an analytical approach. The study examines relevant legal frameworks and regulations, analyzing how AI is incorporated into healthcare and the legal issues surrounding its use.

Results. The study finds that AI plays a significant role in improving the efficiency of healthcare facilities and the performance of medical personnel in Indonesia. AI enhances diagnostic speed, reduces workloads, and improves service quality, especially in regions with a shortage of medical personnel. However, the study also identifies significant legal challenges, including issues related to accountability, patient data protection, and technical standards. Currently, the regulations governing these aspects are inadequate.

Conclusion. AI has significant potential to optimize healthcare facilities and improve medical personnel performance in Indonesia. However, from the perspective of positivist law, clear and comprehensive regulations are necessary to address challenges related to accountability, data protection, and technology security. These regulations are crucial to ensure legal certainty and protection for all stakeholders involved in the healthcare system.

KEYWORDS

Artificial Intelligence, Healthcare Facilities, Legal Perspective

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INTRODUCTION

Health is a human right and one of the elements of welfare that must be realized in accordance with the ideals of the Indonesian nation as referred to in Pancasila and the Constitution of the Republic of Indonesia in 1945. Article 28 H paragraph (1) of the 1945 Constitution states that "everyone has the right to live a prosperous life in birth and

mind, to live, and to have a good and healthy living environment and the right to receive health services" (Undang-Undang Republik Indonesia Nomor 17 Tahun 2023 Tentang Kesehatan, 2023). Health is included in human rights which is one of the elements of welfare that must be realized in accordance with the ideals of the Indonesian nation as referred to in Pancasila and the 1945 Constitution of the Republic of Indonesia (Pelau, 2021).

Basically, the state has guaranteed the right to live a decent life and get health services, as stated in Law Number 17 of 2023 concerning Health, which repeals the existence of Law Number 36 of 2009 concerning Health and 11 other laws in order to create the welfare of citizens, which is the human right of every human being and has become the responsibility of the state to ensure that every citizen gets access to health(Markus, 2021). One of the country's capabilities regarding the health of its citizens is influenced by the existence of health facilities and infrastructure (Borges, 2021). According to Article 1 paragraph 8 of Law Number 17 of 2023 concerning Health, it states that "A health service facility is a tool and/or place used to carry out health efforts, both promotional and preventive. curative, as well as rehabilitative carried out by the government, local governments, and/or the community." and in Article 1 paragraph 1 of Law Number 17 of 2023 concerning Health, it is stated that health is a state of health, both physically, mentally, and socially and not just free from disease to enable it to live a productive life (Undang-Undang Republik Indonesia Nomor 17 Tahun 2023 Tentang Kesehatan, 2023).

The development of information and communication technology has resulted in significant innovations in various sectors, including the health sector (Secinaro, 2021). One of the most prominent innovations is the use of artificial intelligence (AI) to optimize healthcare facilities (Ghassemi, 2021). AI has the potential to revolutionize the way healthcare is delivered, from disease diagnosis and treatment to hospital management and patient interaction (C. Zhang, 2021). With its ability to analyse big data, AI can assist in the identification of patterns that may not be visible to humans, allowing for faster and more accurate decision-making (H. Wang, 2023).

Optimizing healthcare services through the use of artificial intelligence can not only improve service efficiency and effectiveness, but also reduce the cost burden and improve the patient experience (Pan, 2021). For example, AI technologies such as *machine learning* and predictive analytics have been used to detect diseases at an early stage, speed up the treatment process, and predict possible complications (Bag, 2021). In this context, the role of AI is not only limited to data processing, but also includes the development of medical aids, remote health monitoring, and improved hospital management that is more responsive to patient needs (F. Shi, 2021).

The view of legal positivism provides the basis for normative legal research. Broadly speaking, the view of legal positivism interprets the essence of law as positive norms in the system of laws and regulations (Collins, 2021). There are three foundations of legal positivism. The first foundation is that law is a human command that separates law from morality. Second, the research conducted on law is separated from elements outside the law such as history, sociology and politics. Third, the legal system is a closed logical system in which the correct decision can be deduced from the predetermined legal rule with a purely logical intent (Shastri, 2021). The strength of the legal positivist view is an argument based on the application of positive norm structures to concrete cases. The reasoning patterns used are*top to down*with a deductive pattern. In this regard, it is important to review the laws governing personal data protection, medical ethics, and professional responsibility in the practice of Health (Misra, 2022). The teaching of legal positivism began in the 18th century and became stronger along with the progress of the modern state which was marked by the rapid development of science and technology (Moor, 2023).

The application of this advanced technology is inseparable from complex legal, ethical, and social challenges (Angelov, 2021). The positivist legal perspective provides a solid foundation for analysing the regulations governing the use of artificial intelligence in healthcare (Cooper, 2023). The law of positivism emphasizes the importance of norms and regulations set by official institutions in shaping the behaviour of society (J. Zhang, 2021). In this context, it is crucial to understand how existing legal frameworks can support or hinder the optimization of healthcare facilities through AI(Velden, 2022) .

One of the main challenges faced is the protection of patients' personal data. In the digital era, health information is sensitive data that must be strictly protected (Fang, 2021). Therefore, existing regulations must ensure that patient data is not misused and remains secure. In addition, the emergence of questions regarding the accountability of AI systems has become a central issue (Rathi, 2023). Who is responsible when a misdiagnosis occurs due to a recommendation from an AI-based system? This requires clear regulations regarding legal responsibility in these cases (Ghorbanzadeh, 2021).

Furthermore, a positive legal approach must consider the existence of fairness and ethical principles in the use of AI in healthcare (Spagnolo, 2021). Justice comes from the word fair, according to the Indonesian Dictionary fair is not arbitrary, impartial, unbiased (Feng, 2021). Fair mainly means that a decision and action is based on objective norms. Justice begins with a mutually agreed primary choice (Zachary, 2022). Equity in access to healthcare becomes increasingly important as these new technologies can create gaps in services between those who are able and those who are unable to access advanced technology. Therefore, it is important to evaluate existing policies and make revisions if necessary so that all levels of society can benefit from these technological advancements (Simic, 2023).

RESEARCH METHODOLOGY

The approach method used is normative juridical research. The normative juridical research method is a literature law research conducted by researching library materials or secondary data. Normative juridical research is a process to find legal rules, legal principles, and legal doctrines to answer legal problems faced (Jian, 2020).

The instrumentation in this study consists of a literature review and analysis of legal documents. The main tools used are primary legal materials, namely Law No. 17 of 2023 concerning Health and the 1945 Constitution, while secondary legal materials are legal doctrines, academic literature, and scientific articles (Mueller, 2020). All of these documents are used to explore and analyse the legal issues that are being researched. This research procedure begins by identifying relevant regulations and legal documents, followed by the collection and analysis of these legal materials (Bauer, 2021). The data that has been obtained is then analysed through a qualitative analysis approach, namely by observing the data obtained and connecting each data obtained with the provisions and legal principles related to the problem being researched (O'Brien, 2020).

The data collection technique carried out is to conduct a study *legal research* in the form of literature research (*library resarch*), namely by collecting and studying and analysing the provisions of laws related to health law. In this study, the scope of this research will be conducted by drawing legal principles, which are carried out on written and unwritten positive laws (C. Shi, 2021).

RESULT AND DISCUSSION

The Role of AI in Optimizing Health Facilities and Improving the Performance of Medical Personnel in Indonesia

The approach to using artificial intelligence or expert systems is a new breakthrough in the world of health in handling and managing various problems for patients, including in the treatment of patients with emergency conditions. The use of AI is a cutting-edge and up-to-date approach using technology that continues to advance and makes it easier for health workers to provide help. With the development of very modern technology, a technology that is able to adopt the human way of thinking is also developed, namely technology *Artificial Intelligence* or artificial intelligence. The purpose of the expert system is not actually to replace the brain's abilities or *skills* humans, but in order to present human thinking abilities in the form of an operating system, so that they can be used by humans themselves. The expert system will provide solution capabilities that are as appropriate as the capabilities of an expert. The expert system is created based on science in a certain field that is close to a person's ability under specific conditions (X. Wang, 2021).

Artificial intelligence (AI) has become one of the most promising innovations in healthcare, offering solutions to address the various challenges facing the sector, especially in Indonesia. As technology evolves, AI is able to change the way healthcare is delivered and managed. In this context, the application of AI in health facilities can be carried out in various aspects, from administrative to clinica. Here are some of the significant roles of AI in optimizing healthcare facilities and improving the performance of medical personnel in Indonesia (Hamann, 2023).

Health Data Processing and Analysis

AI has the ability to process and analyse large amounts of health data quickly and accurately. Data collected from various sources, such as electronic medical records, laboratory results, and epidemiological reports, can be processed by AI-based systems to provide deep insights into public health. In the context of hospitals and other healthcare facilities, AI technology can be used to:

Health Pattern Identification: By analysing population data, AI can help determine frequent disease patterns, identify risk factors, and predict the spread of disease. This is important in healthcare planning and data-driven decision-making.

Resource Management: AI can also assist in the planning and management of resources, such as the number of medical personnel, medical devices, and medicines needed, based on accurate analytical data. Thus, resource allocation can be carried out more efficiently and on target.

Diagnostic and Therapeutic Support

One of the most recognizable applications of AI is in diagnostic and therapeutic support. AI systems, such as those that use machine learning algorithms, can assist medical personnel in diagnosing diseases more quickly and accurately. Examples include:

Image Introduction

AI-based image recognition technology can be used in radiology to detect cancer, lung disease, and other abnormalities through X-ray image analysis, CT scans, or MRIs. With these tools, medical personnel can identify serious health problems faster, allowing for earlier intervention and increasing the chances of a patient's recovery.

Treatment Recommendations

AI can also provide treatment recommendations based on patient data and best clinical practices. An integrated AI system can assist doctors in choosing the most effective and safe therapy for patients, based on medical history, previous responses to treatment, and other individual factors.

Operational Management and Optimization

AI has an important role in the operational management of healthcare facilities, which includes managing patient schedules, resource allocation, and cost control. Some of the benefits that can result from the application of AI in operational management include:

Optimization of Administrative Processes

With an integrated AI system, administrative processes such as patient registration, scheduling, and billing can be automated, reducing the administrative workload of medical personnel. This allows them to focus more on clinical tasks and patient care.

Reduced Wait Time

AI can help in managing queues and optimizing patient wait times. With proper data analysis, hospitals can predict and manage patient density, thereby reducing waiting times and improving patient satisfaction.

Skill Improvement and Education of Medical Personnel

AI also has the potential to improve the skills and education of medical personnel in Indonesia. Through AI-based simulations and machine learning, medical personnel can be trained in a variety of clinical scenarios without risk to patients. Some of the ways this skill improvement can be improved include:

Training Simulation

With AI-based simulation technology, medical personnel can practice handling emergency situations, medical procedures, and patient interactions realistically. This simulation allows them to hone practical skills and boost their confidence before jumping right into the field.

Access to Educational Resources

AI can also provide access to medical professionals to update their knowledge regarding the latest developments in diagnosis, therapy, and health technology. AI-based learning platforms can offer online courses tailored to individual needs, ensuring that medical personnel remain skilled and competitive.

Supports Telemedicine and Remote Services

In the digital era, the need for telehealth services is increasing, especially after the COVID-19 pandemic. AI plays a crucial role in the development of telemedicine. Some of AI's contributions in telemedicine include:

Real-Time *Analysis of Patient Data*

With an AI-based system, medical personnel can monitor the patient's condition in real-time through wearable devices and health applications. The data obtained can be used to provide clinical recommendations directly, even in remote settings.

Improving Healthcare Accessibility

AI-powered telemedicine *services* allow medical personnel to reach more patients, including those in remote and hard-to-reach areas. This contributes to equitable access to health services throughout Indonesia, reducing disparities in health services.

Legal Challenges Emerging in the Utilization of AI in the Health Sector from the Legal Perspective of Positivism

The use of artificial intelligence (AI) in the health sector is experiencing rapid development with a number of significant positive potentials. Among them are improving diagnostic accuracy through more in-depth and algorithm-based analysis of medical data, accelerating the treatment process with more targeted recommendations, and improving the efficiency of medical services that can reduce the workload of health workers and increase access to faster and more appropriate health

services. In addition, AI can play an important role in assisting with clinical decision-making, prediction of treatment outcomes, and optimization of hospital management and patient care flows. All of this shows that AI has the ability to revolutionize the healthcare sector and improve the quality of life of society as a whole (Paoli, 2021).

However, behind these benefits, there are also significant legal challenges related to the application of AI in the health sector that should not be ignored. These challenges include important issues such as patient data privacy and security, legal liability in cases of malpractice or misdiagnosis caused by AI, as well as medical ethics related to the role of humans in medical decision-making that are increasingly being replaced by technology. Other issues are the potential for discrimination resulting from AI algorithms that may be biased, as well as the impact of AI on the relationship between doctors and patients, which have traditionally relied heavily on trust and empathy.

From the perspective of positivism law, which emphasizes the importance of written laws enacted by official authorities, these challenges become very important to be addressed comprehensively and decisively. The positivism law emphasizes that all actions, including the application of new technologies such as AI, must be governed by legitimate laws and regulations (Ahmad, 2021).

Absence of Clear and Specific Legal Rules

From the perspective of positivism law, a new action or innovation must be governed by clear and specific legal regulations. However, one of the main challenges in the application of AI in the health sector is **the lack of specific regulations** that regulate the use of AI in detail, both in the process of diagnosis, treatment, and the storage and management of medical data. The absence of this rule can create legal uncertainty for health industry players, medical personnel, and patients who use AI-based services.

To be able to apply AI effectively in Indonesia, the Agency for the Assessment and Application of Technology (BPPT) has published the Indonesian National Strategy for Artificial Intelligence 2020-2045. However, the order is still in the policy direction stage in general and does not regulate in detail. Regarding the use of this technology, seeing the process of drafting laws and regulations on the land which leaves a number of problems, ranging from the productivity of legislation products in the House of Representatives to the harmonization of laws and regulations, some people are starting to look at the role of artificial intelligence in efforts to prepare laws and regulations. In the House of Representatives, for example, it is currently implementing a system to supervise the implementation of the Law using technological devices.

Aspects of Legal Responsibility (Liability)

The next challenge is **determination of legal responsibility** when there is an error or loss due to the use of AI. In the health system, medical responsibility usually rests with the doctor or hospital who performs the treatment. However, with AI involved in decision-making processes, such as in disease diagnosis, the question is: who should be held responsible if a misdiagnosis occurs? Are AI developers, healthcare providers, or doctors using the technology? From the perspective of positivism law, it is important to have clear rules regarding who is responsible in these kinds of cases.

Data Protection and Patient Privacy

The use of AI in the healthcare sector often involves collecting, storing, and analysing large amounts of patient medical data, which is sensitive data and requires strict legal protection. This data includes the patient's personal information, such as identity, medical history, and diagnosis results, which must be kept confidential to avoid the risk of misuse or leakage. From the perspective of positivism law, clear and firm regulations are needed to regulate the mechanism for collecting and processing medical data by AI, such as through the Personal Data Protection Law. It is important to ensure that patients' privacy rights are protected and that the use of AI technology is in accordance with applicable legal norms. However, current regulations may not be adequate to anticipate the rapid development of AI in the healthcare sector, so this challenge is becoming increasingly urgent to overcome (Choi, 2021).

Medical Ethics and Legal Compliance

The use of AI in medicine raises ethical questions that require attention from the perspective of the law of positivism. It is unlikely that the application of AI will completely replace doctors. However, it is very likely that the application of AI will gain many roles and generate new tasks in medical care. To be prepared for new roles and assignments, medical students and physicians need to understand the fundamentals of AI and data science, mathematical concepts, and related ethical and medico-legal issues in addition to standard medical principles. Nevertheless, there are no valid and reliable instruments available in the literature to measure the readiness of medical AI . From the point of view of positivism, the answer to this question depends on whether the practice is recognized or legally prohibited. In this context, the law does not question the moral aspect, but only focuses on what has been formally regulated . Thus, it is important for legal authorities to immediately update medical ethics regulations and guidelines to match the development of AI technology, so that legal certainty and ethical protection can be guaranteed, especially in terms of professional responsibility and patient protection (Oladigbolu, 2021).

Regulation of Technological Innovation in Health

From the perspective of positivism law, technological innovation, including the application of artificial intelligence (AI) in the health sector, must be subject to clear laws and regulations that are in accordance with the times. Legal positivism emphasizes the importance of written laws issued by legitimate authorities to regulate all aspects of people's lives, including rapidly evolving technological innovations. However, the main challenge that often arises is that technological developments move much faster than the formation of regulations. The law tends to lag behind technological innovation, thus creating legal loopholes that create uncertainty in the practice of using new technologies such as AI (Lee, 2021).

These challenges are becoming increasingly complex in the healthcare sector, where AI technology is used to analyse medical data, make diagnoses, or even recommend medical treatments. Without specific and comprehensive regulations, there is a risk of technology misuse, such as violations of patient medical data privacy, unclear legal responsibility in misdiagnosis by AI, and ethical impacts that lead to a decrease in human interaction in medical decision-making. Therefore, it is important for governments and legal authorities to immediately issue adaptive and relevant regulations, which are not only able to accommodate technological advances but also provide legal certainty, protect patient rights, and maintain ethical and professional standards in the health sector (Kaye, 2021).

The resulting regulations must be able to balance between supporting technological innovation and protecting the safety and welfare of the community. Innovations in the field of AI offer great potential to improve the efficiency and quality of healthcare services, but their use must be carefully regulated so as not to cause negative impacts, such as inequality in access to healthcare or misuse of personal data. Responsive and proactive laws are needed to address this challenge, by ensuring that regulations are able to keep up with technological developments and take into account various legal, ethical, and social aspects, resulting in a fair, safe, and innovative health system (Brambilla, 2021).

AI Technology Supervision and Testing Authority

From the perspective of positivism law, any new technology used in the healthcare sector, including AI, must go through strict supervision and due diligence from the authorities. This needs to be done to ensure that the technology applied is in accordance with safety and health standards (Kanu, 2021). However, because AI is a complex technology, specific regulations on **Testing, Supervision, and Accreditation Mechanisms** to ensure that the AI is safe to use in medical services (Stern, 2021).

CONCLUSION

Artificial intelligence (AI) and expert systems have become significant innovations in the healthcare sector, particularly in handling patients with emergency conditions and improving service efficiency. This technology is not to replace medical personnel, but to support decision-making with fast and accurate data analysis, provide treatment recommendations, and assist in more precise diagnostics. In addition, AI can optimize hospital operational management, support medical personnel training, and expand *telemedicine* services. Thus, AI plays an important role in improving the quality of health services in Indonesia. The use of artificial intelligence (AI) in the health sector is that AI has great potential to improve the quality of health services, including improving diagnostic accuracy, accelerating treatment, and operational efficiency. AI can also help in clinical decision-making, prediction of treatment outcomes, and more effective hospital management. However, the application of AI in the health sector also presents significant legal challenges, especially related to the privacy and security of patient data, legal liability in malpractice cases involving AI, and medical ethics issues. From the perspective of positivism law, the challenge requires clear and firm regulations to ensure legal certainty. These challenges include the absence of specific regulations, the determination of legal responsibilities, the protection of patient data, and the monitoring of technological innovations. Proper regulation is indispensable to accommodate technological advances without neglecting safety, ethics, and patient rights. The law must be responsive to technological developments, balancing innovation and protection of society.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.

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