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Artificial Intelligence In Telemedicine: Regulatory Challenges And Legal Accountability In Indonesia

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Abstract: Technological development has become a key catalyst in transforming various aspects of human life, including the healthcare sector, through telemedicine services. Telemedicine has emerged as an innovative solution to address challenges in healthcare access, particularly during the COVID-19 pandemic, by offering convenience, efficiency, and affordability. One of the supporting technologies that strengthens the telemedicine system is artificial intelligence (AI), which can analyze medical data, accelerate diagnosis, and monitor patients in real time. AI branches such as Natural Language Processing (NLP) also play a role in processing unstructured medical data, thereby supporting efficient documentation and clinical decision-making. However, the application of AI in telemedicine requires serious legal and regulatory attention. In Indonesia, the legal framework governing telemedicine and AI remains limited, lacks comprehensiveness, and is not yet legally binding. This situation raises ethical risks, algorithmic bias, and uncertainty regarding legal liability. Meanwhile, countries such as the European Union, Singapore, and Australia have designed adaptive regulations oriented toward patient safety and data protection. In facing these challenges, legal accountability from the Indonesian government is required as part of the implementation of good governance principles. The government must formulate clear, transparent, and inclusive regulations while ensuring the involvement of medical professionals in AI-based decision-making. Such measures will serve as strategic elements in building a safe, fair, and sustainable digital healthcare system.

Keywords: Artificial Intelligence, Telemedicine, Legal Accountability

INTRODUCTION

Health constitutes a fundamental pillar of national development and serves as a key indicator of civilizational progress. It encompasses physical, mental, and social well-being, enabling individuals to realize their full potential. As a fundamental human right, every person is entitled to the highest attainable standard of health without discrimination. At the same time, the state bears the obligation to respect, protect, and fulfill this right. The COVID-19 pandemic tested the resilience of global health systems and, at the same time, accelerated the digitalization of healthcare services, particularly through the adoption of telemedicine. Telemedicine expands access to healthcare, enhances efficiency, and reduces costs for society (Shinta Lestari DG, 2021). Technological advancement has become a central driver in

reshaping modern human life. Its influence extends across multiple domains—from transportation through ride-hailing applications, to virtual assistants that facilitate daily activities, and significantly, to healthcare. In this context, telemedicine represents a significant transformation, defined as the use of information and communication technologies to deliver healthcare services remotely (World Health Organization, 1998).

During the COVID-19 pandemic, the use of telemedicine services increased significantly. A study by Murima reported that 44% of respondents used telemedicine for the first time because of the pandemic, with overall usage rising by 78% (Murima et al., 2022). According to data from the Ministry of Communication and Information Technology of the Republic of Indonesia, prior to the pandemic, the number of telemedicine users in Indonesia was approximately 4 million. By June 2020, at the onset of the pandemic, this figure had surged dramatically to 15 million users (Kementerian Komunikasi dan Informatika, n.d.). The use of telemedicine has begun to decline due to the end of the COVID-19 pandemic. Although the pandemic emergency status has ended, the use of telemedicine still needs to be strengthened. WHO has made the expansion of telemedicine a sustainable priority agenda to address various health problems, emphasizing that services should be integrated into the health system, not merely as a temporary solution (World Health Organization, 2022).

The adoption of telemedicine must become a priority for countries worldwide, including Indonesia. In nations with advanced and fast technology, telemedicine is supported by artificial intelligence (AI). AI stands out as an innovative solution that enhances the digital healthcare system. It enables quick and precise analysis of medical data, assists doctors in diagnosing diseases, and supports data-driven clinical decisions. In telemedicine, AI can be used for developing medical chatbots, automated triage systems, and real-time patient monitoring through wearable devices. With its ability to learn from data and adapt, AI will play a crucial role in boosting efficiency, accessibility, and the quality of healthcare services, especially for communities in remote areas or with limited mobility (Maulida et al., 2024).

The legal framework governing artificial intelligence (AI) in Indonesian telemedicine is still insufficient. It requires further development to address all aspects of digital healthcare services fully. Current regulations include the Regulation of the Minister of Health of the Republic of Indonesia Number 20 of 2019 on the Implementation of Telemedicine Services Between Healthcare Facilities, Law Number 17 of 2023 on Health, and Government Regulation of the Republic of Indonesia Number 28 of 2024 on the Implementation of Law Number 17 of 2023 on Health.

The Regulation of the Minister of Health Number 20 of 2019 defines telemedicine and telemedicine services. It outlines the requirements for providing telemedicine, specifies the types of telemedicine services such as teleradiology, tele-electrocardiography, tele-ultrasonography, teleclinical consultation, and telemedicine consultation services, as well as the institutions authorized to provide them. Government Regulation Number 28 of 2024 on the Implementation of Law Number 17 of 2023 on Health states that the use of information and communication technologies should be conducted through Telehealth and Telemedicine. Although this regulation addresses telemedicine, it remains inadequate, leading to policies that are considered insufficiently reflective of on-the-ground conditions.

The regulation of telemedicine in Indonesia remains underdeveloped. Despite rapid advances in artificial intelligence (AI) technology, Indonesia still lacks a comprehensive and legally binding regulatory framework, especially in key sectors. The legal provisions under Law Number 1 of 2024, which amends Law Number 11 of 2008 on Electronic Information and Transactions, only categorize artificial intelligence as a technological tool. They do not specify how patient data is handled when AI analyzes diseases or addresses issues such as algorithmic bias in telemedicine. Therefore, the Electronic Information and Transactions Law (UU ITE) does not explicitly define artificial intelligence.

Additional regulation has been issued through Circular of the Minister of Communication and Informatics Number 9 on the Ethics of Artificial Intelligence. However, it is only advisory and not legally binding. The lack of a legal framework regulating accountability in artificial intelligence use creates risks of misinformation, algorithmic bias, and ethical violations. In law enforcement, it remains unclear who holds legal responsibility in cases of misuse of AI. The absence of legal standards and their lack of binding regulations create a significant gap in oversight and implementation guidelines, especially for private service providers operating in the rapidly expanding digital health sector. Current rules do not offer detailed provisions on telemedicine, including the use of artificial intelligence within the Indonesian healthcare system. This explanation clearly shows where the legal gaps are in implementing AI in telemedicine in Indonesia. It suggests how the Indonesian government should respond to address this regulatory void.

METHOD

This study employs a normative juridical method, examining legal provisions to assess the development of legal norms concerning the benefits of artificial intelligence (AI) in the context of digital healthcare through telemedicine. The research adopts a comparative and analytical approach by comparing relevant legislation to explore perspectives on the application of AI in telemedicine. The study relies on secondary data, which consists of primary, secondary, and tertiary legal materials. Primary legal materials include binding legal sources in the form of applicable statutory regulations. Secondary legal materials comprise research findings, scholarly articles, and other related sources. Tertiary legal materials consist of dictionaries, indexes, and similar references. Data collection was conducted through editing and systematically reorganizing the legal materials in an orderly sequence to facilitate interpretation. The data were then analyzed using a descriptive-analytical method.

RESULTS AND DISCUSSION

The history of artificial intelligence began with ancient tales of artificial beings endowed with intelligence, later evolving from philosophical reflections on how the human mind works through symbols. The development of digital computers further fueled ideas about an artificial brain. Alan Turing pioneered the concept of Machine Intelligence (HODGES, 2006), while the term Artificial Intelligence was officially introduced by John McCarthy in 1956 at the Dartmouth Workshop (Kaplan & Haenlein, 2019). This workshop marked the birth of AI as an academic discipline that explores the potential of machines to imitate human intelligence (Heriyanto & Sahrul, 2023)

Since the COVID-19 pandemic, artificial intelligence (AI) has been increasingly utilized in the healthcare sector. The integration of AI with Natural Language Processing (NLP) presents vast opportunities, ranging from automated documentation and improved physician efficiency to enhanced service quality and patient safety. AI can process large volumes of patient data, uncover hidden patterns, and provide accurate medical insights. NLP is beneficial in interpreting unstructured medical texts such as medical records (Cunha Reis, 2025).

The impact is evident: the global telehealth market is projected to grow from USD 194.1 billion in 2023 to USD 590.6 billion by 2032. In 2023, 52% of adults had used telemedicine, generating digital health revenues of USD 26.59 billion (Statista, 2025). In Australia, telemedicine saves up to six hours per patient annually, while in Italy, patients with chronic illnesses save as much as 9.5 hours (Barry Elad & Rohan Jambhale, 2025). These figures demonstrate that AI in telemedicine brings significant benefits to healthcare services worldwide.

The Role of Artificial Intelligence in Telemedicine: Healthcare and Legal Perspectives

The implementation of telemedicine supported by artificial intelligence (AI) technology provides highly enhanced and significant functions. First, the use of AI in medical diagnostics accelerates and improves the accuracy of disease identification by recognizing specific patterns in medical imaging associated with patient data (Chaturvedi et al., 2025). This technology can detect distinctive characteristics of diseases such as cancer (Ardila et al., 2019). The role of AI in tele-oncology is becoming increasingly important due to its capacity to improve precision, accuracy, and efficiency in cancer diagnosis, as well as in treatment planning and monitoring over time. AI can analyze large volumes of medical data, such as images and reports, to identify patterns that may be difficult for physicians to recognize. This capability supports more accurate diagnoses and the selection of appropriate treatments. Artificial intelligence can also provide personalized treatment recommendations tailored to a patient's condition and medical history, leading to more optimal outcomes and reduced risks of side effects (Sharma et al., 2023a). In addition, AI can monitor patient progress and enable early detection of complications or cancer recurrence.

The second application of artificial intelligence lies in supporting remote patient monitoring by learning from data collected through wearable devices and health applications. This is particularly valuable in managing chronic diseases, as it enables early detection of potential issues and the implementation of interventions before complications develop (Gulshan et al., 2016). By recognizing patterns in vital signs, AI can alert healthcare providers and patients about potential health risks (Kulkarni et al., 2022).

The third application involves predictive analytics powered by artificial intelligence, which leverages historical data and machine learning techniques to forecast future medical events. This approach helps identify patients at high risk of hospitalization or disease recurrence, thereby enabling the development of more proactive care strategies (Tawfik Masrour et al., 2021). In this way, clinical outcomes can be improved while simultaneously reducing the financial burden of healthcare services.

The fourth application of artificial intelligence plays an important role in caring for patients with chronic diseases through continuous monitoring of health data and the design of treatment plans tailored to individual needs. AI can be applied in insulin infusion systems for diabetes patients, which require real-time monitoring of glucose levels (He et al., 2019). In addition, AI-based teleconsultation platforms support virtual consultations and remote follow-ups, fostering patient engagement and improving adherence to prescribed therapies.

The fifth application of artificial intelligence provides benefits through automation and enhanced decision-making processes. AI-powered chatbots can assist in conducting initial triage of patient inquiries, scheduling consultations, and performing preliminary health assessments. This contributes to greater efficiency in healthcare services. Furthermore, AI algorithms enable medical professionals to analyze patient data in real time during consultations, thereby allowing more accurate and targeted medical decisions (Shameer et al., 2018).

With the help of telemedicine, medical data such as images and information about cardiac conditions can be transmitted from one location to another. This is especially useful for patients living in remote areas or with limited mobility, as they can still receive consultations and diagnoses from doctors. Additionally, teleradiology has been shown to improve diagnostic results and lower costs, making it more appealing for hospitals and clinics. The use of artificial intelligence (AI) in teleradiology is also growing. AI can process large amounts of data quickly and accurately, which is very valuable for diagnosing and managing heart diseases. For example, AI can analyze electrocardiogram (ECG) results or cardiac images to find patterns or abnormalities that might not be obvious to doctors. This allows for earlier detection and faster treatment of cardiovascular diseases, increasing patients' chances of recovery.

The sixth application of artificial intelligence (AI) plays a crucial role in improving the efficiency and accuracy of mental healthcare services while overcoming the limitations of traditional telepsychiatry. This technology can analyze speech patterns and facial expressions in real time to identify symptoms like depression or anxiety. Additionally, AI can offer treatment suggestions customized to a patient's condition and medical history and assist in detecting potential drug interactions (Sharma et al., 2023b). AI can also conduct virtual therapy sessions and provide self-help tools such as cognitive-behavioral therapy (CBT) exercises or mindfulness meditation, which patients might use outside of counseling sessions, especially in areas with a shortage of mental health professionals.

The seventh application involves telestroke systems that integrate AI algorithms, such as machine learning, to automate the interpretation and classification of radiological images. These algorithms have demonstrated the ability to identify the location, severity, and subtype of stroke, including midline shifts (Ali et al., 2020a). In some instances, such automated systems have also supported decision-making in endovascular reperfusion therapy (Vagal et al., 2019). In pre-hospital notifications, artificial intelligence (AI) can alert emergency departments about incoming stroke cases, allowing for proper preparation and management tailored to the stroke type and other relevant factors (Ali et al., 2020b). Platforms such as The Alberta Stroke Program Early Computed Tomography Score (ASPECTS) (Nagel et al., 2017) and Rapid Processing of Perfusion and Diffusion Artificial Intelligence (RapidAI) (Kauw et al., 2020) use machine learning and neuroimaging to evaluate the extent of early ischemic stroke and provide real-time visualization of cerebral perfusion.

The eighth application of artificial intelligence (AI) lies in the pharmaceutical field, particularly in the processes of drug discovery and the analysis of the chemical and pharmacological characteristics of compounds (Palaniappan et al., 2024). The ninth application involves AI-powered image-based diagnostic technologies that help physicians make accurate diagnoses within primary healthcare. The process starts by connecting an application to a remote data center and uploading images of skin lesions to identify common dermatological conditions. By enabling automated image analysis, doctors who are not dermatology specialists can receive potential diagnoses or lists of differential diagnoses (Esteva et al., 2017).

Artificial intelligence (AI) has a substantial impact on healthcare. However, its implementation remains challenging due to ethical concerns such as bias and transparency. To address these challenges in telemedicine, clear regulations and guidelines are essential. Healthcare institutions must also invest in training and capacity building to ensure that medical professionals can effectively utilize AI technologies. While AI may surpass human accuracy in specific contexts, physicians remain indispensable due to their ability to interpret patient information dynamically, make complex clinical decisions, and assess medical risks and consequences comprehensively (Sharma et al., 2023c).

The importance of maintaining patient data security and privacy is paramount because it ensures that patient information is transmitted and stored securely while preventing unauthorized access to personal health data. The use of encryption becomes an unavoidable step. Telemedicine platforms should implement encryption methods both for data being transmitted over the network and for data stored in the system. Regulations require human oversight in medical artificial intelligence (AI) systems, the purpose of which is to ensure that healthcare professionals remain involved in making important decisions, especially in situations that carry high risks for patients. The presence of humans in this process assures that medical decisions are not entirely left to machines. The aspects of equality and accessibility must also be considered, as artificial intelligence (AI) technology and telemedicine services need to be designed so that they can be accessed by various groups in society, including those living in remote areas or those with limited digital literacy. Regulations that favor inclusivity will encourage the creation of a fair system that can reach all levels of society.

The development and use of artificial intelligence (AI) in the world also drives the need for the implementation and enforcement of transnational jurisdiction law. Providers of AI-based telemedicine services may be required to obtain licenses in accordance with the regulations of the country or region where they operate. An individual or group of healthcare professionals from one region may not be allowed to provide services to patients in another region without meeting the medical licensing requirements of a particular jurisdiction. Some countries establish national or international standards that must be complied with in the implementation of telemedicine, and these standards may include provisions on patient consent, service quality, and information transparency. In the context of cross-border services, telemedicine and AI regulations often require international cooperation through agreements or joint legal frameworks, given the nature of this technology that transcends geographical boundaries (Shanu Singh Chouhan, 2025).

Regulation of Artificial Intelligence in Telemedicine in Indonesia and Other Countries, and Legal Liability of AI

The health sector is regarded as an integral part of public welfare, which constitutes the responsibility of the state to realize. This aligns with the values contained in Pancasila and the mandate stated in the Fourth Paragraph of the Preamble to the 1945 Constitution, which affirms Indonesia's commitment to ensuring the general welfare of all its people. Article 28H paragraph (1) of the 1945 Constitution stipulates that "Every person shall have the right to live in physical and spiritual prosperity, to have a place to live, and to enjoy a good and healthy living environment, and to receive health care." Health plays a vital role in human life, and therefore, development efforts in this field must encompass all aspects of life. In its implementation, both the government and society are expected to contribute in a balanced and equitable manner. The primary goal of health development is to encourage individuals to adopt healthy lifestyles, fostering greater awareness, willingness, and ability. In this way, an optimal level of public health can be achieved, which simultaneously serves as an essential foundation for developing human resources that are socially and economically productive (Republik Indonesia, 2023).

Health development in Indonesia is regulated by laws that serve as legal guidelines for the application of legal norms within Indonesian society. This implementation can be seen in the advancement of health technologies, such as telemedicine and telehealth. The implementation of telemedicine in Indonesia began during the pandemic through the Decree of the Minister of Health Number HK.01.07/MENKES/4829/2021 concerning Guidelines for Health Services Through Telemedicine During the Coronavirus Disease 2019 Pandemic. After the COVID-19 pandemic, the application of telemedicine expanded with the introduction of the integrated referral system, known as the *Sistem Informasi Rujukan Terintegrasi* (SISRUTE).

SISRUTE serves as a medium of communication and information that connects patient data from lower-level to higher-level healthcare services or equivalent services (both horizontally and vertically), to facilitate and expedite the patient referral process. The SISRUTE process begins with communication between healthcare facilities before a referral is received. Feedback from the receiving hospital includes information on the availability and adequacy of facilities, infrastructure, and human resources to handle the case. SISRUTE is regulated under the Decree of the Director General of Health Services Number HK.02.02/D/1131/2023 concerning Technical Guidelines for the Use of the Integrated Referral Information System Application. However, in practice, there remains regulatory ambiguity regarding the use of Artificial Intelligence in telemedicine, which poses potential risks, including patient safety, service accountability, and the overall quality of healthcare services. Analyses highlight that several shortcomings exist (Mulyadita et al., 2025):

First, legal classification and operational requirements. Current telemedicine regulations in Indonesia have not yet explicitly established competency standards for Indonesian doctors, which should include specific skills in telemedicine practice. Such updates would determine whether doctors are permitted to diagnose and manage cases through telemedicine independently.

Second, the scope of telemedicine services. The absence of explicit regulations creates uncertainty regarding which types of medical services are legally permissible to be conducted online. Providers face challenges in implementing remote diagnosis, virtual physical examinations, and radiology interpretation. This regulatory gap significantly affects prescription practices, as there are no official guidelines regarding the issuance, validation, and distribution of prescriptions via digital systems. This uncertainty poses both legal and operational risks for medical personnel and pharmacies.

Third, scope and professional certification. From a regulatory perspective, the division of competencies between general practitioners and specialists has been established through the Indonesian Medical Competency Standards. In the context of digital health services via telemedicine, medical personnel are still required to practice in accordance with the competencies and authorities that have been set. Minister of Health Regulation Number 20 of 2019 on the Implementation of Telemedicine Services Between Healthcare Facilities stipulates that telemedicine services may only be provided by licensed health professionals operating within registered healthcare facilities. However, the absence of explicit technical protocols regulating referral pathways, professional responsibilities, and practice boundaries in digital services has created confusion in practice. In addition, the absence of an accreditation system and standardized training for providers and medical personnel in telemedicine makes it challenging to ensure quality control, assess competencies, and maintain continuity of care across platforms.

Fourth, legal protection for patients and healthcare professionals. Medical personnel delivering telemedicine services currently lack adequate legal protection regarding professional liability and malpractice risks. The absence of formal dispute resolution mechanisms leaves both doctors and patients vulnerable to legal consequences in cases of medical errors or service dissatisfaction. This situation hinders the widespread adoption of telemedicine and limits public access to digital healthcare services.

Liability in the practice of telemedicine by healthcare professionals is explained by the principle that doctors continue to bear professional responsibility for diagnosis and treatment, even when assisted by artificial intelligence (Sherly Primavita et al., 2021). Healthcare facilities are responsible for the delivery of services, including data security and the validation of medical staff competencies. Meanwhile, digital platform providers hold responsibility for electronic systems and patient data protection (Ismi Fadjriah Hamzah, 2024). The development of protection mechanisms can be analyzed by looking at the European Union, which has established a more structured legal framework. Physicians remain professionally liable and are required to have malpractice insurance that also covers digital services (Nasution et al., 2024).

Healthcare facilities must ensure that clinical and technical standards are met and guarantee data interoperability. Platform providers are subject to strict regulations under the General Data Protection Regulation (GDPR), which governs data security and system transparency. Furthermore, the European Union is developing the European Health Data Space (EHDS) to clarify legal responsibilities among actors within the digital healthcare ecosystem. This approach demonstrates that clear delineation of roles and legal liability is crucial to ensure the protection of patients and healthcare professionals, while also fostering public trust in telemedicine services (European Union, 2024).

In Singapore, the Healthcare Services Act (HCSA) stipulates that telemedicine is recognized as a licensed healthcare service, requiring providers to comply with strict standards

of clinical governance and accountability (Healthcare Services Act 2020 Singapore, 2020). Artificial intelligence (AI) technologies used in diagnostic or therapeutic processes are classified as medical devices. They must obtain approval from the Health Sciences Authority (HSA) to ensure compliance with established safety and efficacy standards.

Fifth, data security in system integration. The existing regulatory framework allows for significant variation in telemedicine systems among providers, which poses risks to data security and medical record management. Healthcare facilities face a dilemma between safeguarding patient confidentiality and ensuring the smooth exchange of data across service units. Personal medical information is among the most sensitive types of legally protected data, and there are significant concerns about how such data may be accessed, controlled, and used by third parties (Murdoch, 2021). Emphasizing patient rights and consent in the development of regulations in this area would better reflect legal and ethical values. The absence of mandatory interoperability standards hampers the integration of telemedicine with existing electronic medical record systems. This fragmentation disrupts continuity of care and reduces service efficiency. Moreover, the lack of standardized data management protocols heightens threats to patient privacy and the security of health information.

In Indonesia, medical records are regulated under Minister of Health Regulation Number 24 of 2022 on Medical Records, which stipulates that healthcare facilities own medical record documents, while the content of medical records (patient data) is the right of the patient. Patients are entitled to obtain a copy of their medical records. The content of medical records must be kept confidential. It may only be disclosed with patient consent or under exceptional circumstances (law enforcement, research, epidemics, or disasters). All healthcare facilities (including private practices, community health centers, clinics, hospitals, pharmacies, laboratories, etc.) are required to implement Electronic Medical Records (EMR), including for telemedicine services.

Medical records must comply with interoperability standards to ensure connectivity and data exchange between systems. The above analysis demonstrates that Indonesia's legal development still lags significantly behind other countries that have already regulated artificial intelligence (AI) in telemedicine within the health sector. In Singapore, the management of patient data security by AI systems is regulated under the Personal Data Protection Act (PDPA), which balances the need to protect individuals' personal data with the legitimate and reasonable needs of organizations to collect, use, or disclose such data (Personal Data Protection Commission Singapore, 2025).

The legal development of artificial intelligence in several countries—such as the European Union, Singapore, and Australia—has already encompassed its application in telemedicine services. The European Union, as an intergovernmental and supranational organization consisting of European countries, has established legal frameworks and regulations for Artificial Intelligence in telemedicine. These policies include the Medical Device Regulation (MDR) EU 2017/745, the In Vitro Diagnostic Medical Device Regulation (IVDR) EU 2017/746, the Artificial Intelligence Act (AIA) EU 2024/1689, and the General Data Protection Regulation (GDPR).

These legal instruments serve to establish high standards of quality and safety for medical devices and to create a strong, transparent, and sustainable regulatory framework aimed at improving clinical safety and ensuring fair market access for manufacturers and healthcare professionals (Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on Medical Devices, 2017). They guarantee a high level of protection for health, safety, and fundamental rights as set out in the Charter of Fundamental Rights of the European Union, while also anticipating the negative impacts of AI systems and supporting responsible innovation (Regulation (EU) 2017/745 of the European Parliament and of the Council of 5

April 2017 on Medical Devices, 2017). Under GDPR, patients have the right to access their medical records and health data even when processed remotely (Pesapane et al., 2021).

In 2017, Singapore's Ministry of Health set out a strategic vision known as the "3 Beyonds", which consists of: beyond healthcare to health, beyond hospital to community, and beyond quality to value (Agency for Science, 2024a). Within the context of this transformation, the application of artificial intelligence (AI) in healthcare services has become increasingly relevant. The Singaporean government recognizes the importance of designing policies and regulations that balance technological innovation, personal data protection, and ethical principles. With the growing use of AI in diagnosis, treatment, and patient management, policymakers and regulators are required to establish a comprehensive and adaptive framework. The aim is to ensure that AI technologies are not only safe and effective but also trustworthy to the public, while supporting the long-term vision of a more inclusive and sustainable healthcare system (Agency for Science, 2024b).

Australia has an advanced universal healthcare system facilitated by a national health insurance program known as Medicare. Medicare enables Australians to access public hospital services and primary healthcare facilities free of charge, while paying only a small portion for specific treatments. Data from the Australian Institute of Health and Welfare estimates that many Australians now have access to digital technology, with 86% of households having internet at home and 78% of adults using the internet to seek health information (Australian Institute of Health and Welfare, 2019).

The practical implementation of artificial intelligence (AI) in Australia's telehealth and telemedicine system is regulated by the Therapeutic Goods Administration (TGA), which oversees AI-based Software used in the medical field, especially when such devices influence clinical decision-making (Hall Dykgraaf et al., 2021). In August 2021, the Therapeutic Goods (Medical Devices) Act 2002 was revised, and the TGA released guidelines entitled Regulatory Changes for Software-Based Medical Devices, effective from February 2021, to clarify the amendments. The TGA plays a key role in supervising AI-based medical devices at the national level, working to harmonize with international standards for Software as a Medical Device (SaMDs), which carry significant implications for patient safety (Kavitha Palaniappan et al., 2021).

The management of patient records and health summaries falls under the jurisdiction of the Australian Health Practitioner Regulation Agency (AHPRA) and the Australian Commission on Safety and Quality in Health Care, which have introduced policies such as the Self-Reflective Tool and Health Record Management Obligations. In 2025, the Australian government issued a comprehensive report reviewing existing laws and proposing frameworks to ensure transparency, data security, and human oversight in AI-based healthcare (Kavitha Palaniappan et al., 2021). AI in healthcare is aimed at safeguarding patient outcomes. Australia continues to refine its regulatory landscape by balancing innovation, safety, and the creation of an integrated framework that addresses the ethical and legal complexities of AI in telemedicine (Kavitha Palaniappan et al., 2021).

The issue of artificial intelligence in digital healthcare in developed countries has been addressed much earlier than in Indonesia. The lack of comprehensive legal regulation of AI in telemedicine in Indonesia has led to a significant lag in legal frameworks. Inconsistencies from the government or relevant authorities in enforcing laws particularly when mandatory implementing regulations are not issued have resulted in a legal vacuum (*rechtsvacuum*). Such vacuums may also arise when authorities fail to draft implementing guidelines for higher-level regulations. Consequently, these gaps lead to legal uncertainty (*rechtsonzekerheid*), or uncertainty in legislation, which in turn may result in legal disorder (*rechtsverwerking*) (Nasir, 2017).

In relation to the issues outlined above, the use of artificial intelligence (AI) in Indonesia still faces legal loopholes because no strong or binding legal framework has been established. This absence of secondary legislation regulating AI has caused legal uncertainty and potential disorder, as there are no explicit guidelines to safeguard patient or healthcare provider data security. Although legal instruments do exist such as Law Number 1 of 2024 on the Second Amendment to Law Number 11 of 2008 on Electronic Information and Transactions (ITE Law) and the Circular of the Ministry of Communication and Informatics Number 9 on Artificial Intelligence Ethics these remain insufficient. They fail to provide firm and comprehensive legal norms, leaving unresolved complexities in regulating AI in telemedicine in Indonesia.

The Indonesian government holds a constitutional responsibility in the formation of legislation to address issues that have not yet been regulated into legal norms. This refers to the legal basis of Law Number 13 of 2022 on the Formation of Legislation, which also affirms that the government through relevant ministries or agencies has the obligation to prepare academic manuscripts and draft regulations as the foundation for national lawmaking. In cases where regulations are absent or unclear, the government must act promptly to prevent a legal vacuum, which could harm society and hinder the implementation of effective and equitable governance. With a clear legal basis, the drafting of such regulations must also be guided by fundamental principles, such as the principle of good governance.

Good governance is a normative concept concerning the values by which governance actions are realized, and the methods by which groups of social actors interact within a particular social context. Good governance, with its main characteristics, in relation to the application of artificial intelligence (AI) in the context of telemedicine, must begin with the Rule of Law, which explains that good governance requires a fair legal framework enforced impartially. Transparency means that decision-making processes and their implementation must comply with regulations, accompanied by the provision of information that is open, easily accessible, and clearly communicated to the affected parties; Responsiveness explains that good governance requires institutions and processes to serve all stakeholders within a reasonable timeframe; Equity and Inclusiveness explain that the government ensures that all its members feel that they have an interest in it and do not feel marginalized from the mainstream of society while maintaining their well-being; Accountability is a responsibility that depends on who is affected, both internally and externally. Accountability can be enforced, requiring transparency and compliance with the law as the foundation for fair oversight and evaluation (United Nations Economic and Social Commission for Asia and the Pacific, n.d.).

Based on the explanation provided, it is evident that a government seeking to take responsibility for its actions can establish effective governance by embodying its core characteristics. The Indonesian government must take responsibility for addressing the issues surrounding the implementation of artificial intelligence (AI) in telemedicine, which remains unregulated as a legal norm, by applying the key principles of good governance to establish effective governance in Indonesia.

The implementation of responsibility for this legal issue should have procedures for processing patient and healthcare worker data so that it is not misused by others, as well as providing clarity in the form of proper and detailed legal norms regarding whether telemedicine is considered a health facility or a technology company to differentiate the application of law and its enforcement. It is also necessary to develop efficient and advanced technology for remote telemedicine health services because the use of remote telemedicine has started to decline after the pandemic. This implementation requires oversight to determine whether the legal regulations are being carried out in accordance with the predetermined plan. The oversight system aims to prevent actions that harm the public and to analyze the discovery of mistakes, which are then corrected to prevent their recurrence.

From a legal perspective, it is explained that the legal and regulatory framework governing telemedicine at present needs to be updated to align with the ongoing development of artificial intelligence (AI) technology. The advancement of artificial intelligence (AI) is moving far beyond the ability of regulatory institutions to keep up. This causes gaps in oversight that have the potential to endanger patient safety and reduce the quality of healthcare services. Policymakers and regulators must collaborate with medical professionals, artificial intelligence technology developers, and other stakeholders to develop flexible and visionary policies that address the challenges posed by artificial intelligence in telemedicine. The regulations implemented must encourage innovation in the field of telemedicine while ensuring the responsible use of artificial intelligence (AI) and guaranteeing the protection of patients' rights.

CONCLUSION

The development of artificial intelligence (AI) technology has brought significant impacts on the transformation of healthcare services, particularly through telemedicine. AI enhances efficiency, diagnostic accuracy, and service accessibility, but at the same time raises serious challenges in terms of ethics, data protection, and legal certainty. In Indonesia, existing regulations are limited, lack comprehensiveness, and fail to address the complexity of AI use in digital healthcare services. This situation creates a legal vacuum that poses risks to patient safety, medical accountability, and the protection of patients' rights. Meanwhile, other countries such as the European Union, Singapore, and Australia have taken more advanced steps by establishing adaptive, clear, and patient-safety-oriented regulatory frameworks. Therefore, the Indonesian government has a constitutional responsibility to immediately establish detailed, transparent, and legally binding regulations that uphold the principles of good governance. Collaboration among regulators, medical professionals, technology developers, and other stakeholders is essential to ensure that policies foster innovation, safeguard data security, and guarantee that the use of AI in telemedicine is conducted responsibly, fairly, and sustainably.

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