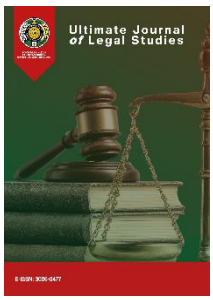
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Legal Liability for the Application of AI in Telemedical Services to Patients

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ABSTRACT

The integration of Artificial Intelligence (AI) in telemedicine services creates opportunities to improve efficiency and expand access to healthcare amid the limited number of medical specialists in Indonesia. On the other hand, AI introduces risks of misdiagnosis stemming from data bias, algorithms that do not fit the characteristics of the Indonesian population, and threats to patient data security. This study aims to analyze the forms of legal liability for patient harm resulting from AI misdiagnosis in telemedicine services and to examine the legal protection available to patients. The study employs a normative juridical method with statutory and conceptual approaches. The findings show that Indonesia does not yet have specific regulations governing AI in the health sector, resulting in a normative gap that creates legal uncertainty. Nevertheless, the provisions of the Health Law, the Electronic Information and Transactions (ITE) Law, and the Consumer Protection Law can be used to identify the responsible parties: medical personnel as the final clinical decision-makers, hospitals under the doctrine of vicarious liability, online health platforms as electronic system providers, and AI technology providers as business actors obliged to ensure the reliability of their systems. In terms of legal protection, patients are entitled to claim compensation or damages for substandard services under the Consumer Protection Law. Therefore, specific regulation on AI in the health sector is needed to ensure legal certainty and patient safety.
Keyword: Artificial Intelligence, Legal Liability, Misdiagnosis, Patient Protection, Telemedicine.

ABSTRAK

Penggunaan kecerdasan buatan dalam layanan telemedis membuka peluang peningkatan efisiensi dan pemerataan akses kesehatan di tengah terbatasnya jumlah dokter spesialis di Indonesia. Di sisi lain, penggunaan AI menghadirkan risiko kesalahan diagnosis yang bersumber dari bias data, algoritma yang kurang sesuai dengan karakteristik populasi Indonesia, serta ancaman terhadap keamanan data pasien. Penelitian ini bertujuan menganalisis bentuk pertanggungjawaban hukum atas kerugian pasien akibat kesalahan diagnosis oleh AI dalam layanan telemedis serta mengkaji perlindungan hukum yang dapat diperoleh pasien. Penelitian ini menggunakan metode yuridis normatif dengan pendekatan perundang-undangan dan pendekatan konseptual. Hasil penelitian menunjukkan bahwa Indonesia belum memiliki pengaturan khusus mengenai AI di bidang kesehatan, sehingga terdapat kekosongan norma yang menimbulkan ketidakpastian hukum. Meskipun demikian, ketentuan dalam UU Kesehatan, UU ITE, dan UU Perlindungan Konsumen dapat digunakan untuk menentukan pihak yang bertanggung jawab, yaitu tenaga medis

sebagai pengambil keputusan klinis akhir, rumah sakit berdasarkan doktrin pertanggungjawaban pengganti, platform kesehatan online sebagai penyelenggara sistem elektronik, dan penyedia teknologi AI sebagai pelaku usaha yang wajib menjamin keandalan sistemnya. Dari sisi perlindungan hukum, pasien berhak menuntut kompensasi atau ganti rugi atas layanan yang tidak sebagaimana mestinya melalui mekanisme UU Perlindungan Konsumen. Oleh karena itu, diperlukan regulasi khusus tentang AI di sektor kesehatan untuk menjamin kepastian hukum dan keselamatan pasien.
Kata Kunci: Kecerdasan Buatan; Kesalahan Diagnosis; Perlindungan Pasien; Tanggung Jawab Hukum; Telemedisin.

1. Introduction

Development in technology, information, and science are progressing year after year, bringing about major changes in various sectors of human life, including the healthcare sector. One of the developing innovations is telemedicine-based healthcare services, which allow patients to consult with healthcare professionals without having to meet in person. This technology represents a highly innovative solution to the shortage of doctors, particularly specialists, in Indonesia. According to data from the Ministry of Health (Kemenkes) for 2025, Indonesia currently produces only about 2,700 (two thousand seven hundred) specialist doctors per year far short of the ideal number needed. This disparity results in uneven access to patient care (Kemenkes, 2025). Thus, telemedicine is a method of providing remote healthcare services by healthcare professionals using information and communication technology, offering services such as direct consultations to improve the effectiveness of healthcare for individuals and the community (Sekeon, 2022). This development also provides convenience and efficiency in accessing healthcare, especially in remote areas that are difficult for medical personnel to reach. This was evidenced by high satisfaction levels during the COVID-19 pandemic (Unairnews, 2023).

The development of telemedicine goes beyond simply facilitating access to connect medical professionals with patients; it also enables many tasks to be performed more quickly and efficiently through the use of Artificial Intelligence (AI). At the ASEAN Telemedicine Symposium (ATS) held on February 21, 2025, at the Faculty of Medicine, Brawijaya University, Prof. Saifur presented the "Detak C" innovation, which combines AI with remote teleconsultation to provide rapid and optimal care that improves patient safety (Prasetyaonline, 2025). This certainly provides a positive boost to the use of AI amid technological advancements in the healthcare sector by helping doctors resolve cases quickly and efficiently.

Although it has significant positive impacts, AI also poses serious issues regarding the safety of its use. Since AI is a tool generally programmed based on general needs, it is not uncommon for it to exhibit bias in diagnoses and solutions based on the broad, general needs of patients, without taking into account the specific needs and unique characteristics of individual patients. This was evident in a statement by Dr. Iwan during the annual global report event hosted by the healthcare technology company Royal Philips in July 2025, in which he stated that foreign healthcare AI technology cannot be directly adopted in Indonesia but must be adapted due to significant racial differences. For example, the standard aortic width for Asians differs from that of Caucasians, and the majority of Asians are resistant to clopidogrel (a blood-thinning medication often recommended by AI) (Tamargo et al., 2022). This demonstrates the potential for misdiagnosis, which, rather than saving the patient, could actually worsen their condition.

This brings us to the legal issues that arise when such a misdiagnosis causes harm to the patient. In the context of conventional health care, Article 17 of Ministry of Health Regulation No. 290 of 2008 on Consent for Medical Procedures states that liability for medical procedures approved by the patient rests with the doctor who performs the medical procedure. However, in cases involving the execution of consent for medical procedures or any form of negligence by healthcare personnel that causes harm to patients in a hospital or any form of negligence or error in patient care legal liability rests with the hospital, as stipulated in Article 193 of Law No. 17 of 2023 on Health. However, the application of AI in telemedicine services presents unique complexities, given the various ways AI can be utilized such as whether it serves merely as an assistive tool or, to a certain extent, actively monitors a patient's health condition 24 hours a day. Numerous parties are involved, including telemedicine platform providers, AI system developers, healthcare facilities, and medical personnel overseeing the system. The complexity of these legal relationships raises questions regarding which party should be held liable in the event of a misdiagnosis that causes harm to a patient. Based on the foregoing discussion, this study examines the forms of legal liability arising from diagnostic errors involving artificial

intelligence in telemedicine services and analyzes the legal protection available to patients as users of digital healthcare services.

2. Method

This study employs a normative legal research method using both the statutory approach and the conceptual approach (Ramlan et al., 2023). This study examines the legal protection of patients in the application of AI in telemedicine services, particularly in the examination of health symptoms and the provision of diagnoses.The 1945 Constitution of the Republic of Indonesia, Law No. 1 of 2024 concerning the Second Amendment to Law No. 11 of 2008 concerning Electronic Information and Transactions, Law No. 8 of 1999 on Consumer Protection, and Ministry of Health Regulation No. 3 of 2025 on the Enforcement of Professional Discipline for Medical and Health Personnel are the primary legal regulations used as primary legal sources. Meanwhile, secondary legal sources include textbooks, opinions and writings by legal experts, the Internet, and scientific journals.

The data collection method employs a literature review approach, drawing on laws and regulations, books, publications, and research findings. The data were analyzed qualitatively through several descriptive-analytical stages (Ramlan et al., 2023). First, the legal provisions governing patient protection both as patients and as consumers were described. Second, legal norms were interpreted using grammatical, systematic, and teleological methods. Next is the evaluation stage, which ensures that the terms and conditions for the use of AI in telemedicine comply with applicable regulations. The results of this evaluation are synthesized to develop a framework for the legal protection of patients regarding the application of AI in telemedicine. The final stage is the recommendation stage, which involves providing legal justifications for the issues under investigation. To address all the issues under investigation, the entire analysis employs deductive logic.

3. Results and Discussion

3.1. The Application of AI in Telemedicine

Telemedicine refers to the provision of medical and healthcare services remotely through digital technology. It enables patients and healthcare professionals to communicate through information and communication technology to conduct consultations, obtain diagnoses, and receive medication recommendations without requiring face-to-face interactions, as in conventional healthcare services (Andriani, 2023). The development of telemedicine has also enabled the integration of Artificial Intelligence (AI) as a virtual assistant that supports medical data analysis, diagnostic processes, and the preparation of patient treatment plans. This integration allows healthcare professionals to provide services more efficiently without being restricted by geographical distance or time (Rossi & Rehman, 2025).

The application of AI in telemedicine can be observed across various medical specialties. In teledermatology, for example, deep learning models can analyze skin lesions with accuracy comparable to that of specialist doctors. This capability supports initial patient screening, referral decisions for individuals in remote areas, and the early identification of mental health risks, including suicide prevention. AI also contributes to remote surgical procedures through robotic surgical devices connected by high-speed communication networks. In this process, AI analyzes images captured by cameras in real time and provides visual guidance to surgeons operating from different locations. Such applications have the potential to reduce clinical errors and improve the precision of robotic surgical instruments (Rossi & Rehman, 2025).

The integration of AI into telemedicine offers several benefits for healthcare delivery, particularly in terms of cost efficiency and treatment accessibility. Globally, telemedicine services have been reported to be approximately 20–40% more cost-effective than conventional healthcare, particularly when implemented on a large scale. AI can also help reduce errors in medical data scanning and medication administration, with an estimated return on investment (ROI) within three to four years. Furthermore, AI-enhanced Remote Patient Monitoring demonstrates cost efficiency of approximately 56% per patient. In Indonesia, the implementation of Electronic Medical Records (EMR), although still limited, has demonstrated the ability to accelerate administrative workflows by approximately 30%, reduce long-term operational costs, and improve the productivity of clinical staff (Setyowati et al., 2025).

Another significant benefit lies in data-driven health monitoring and predictive analytics. AI enables real-time monitoring of patients' health conditions through data collected from remote monitoring devices. Information

concerning blood pressure, blood glucose levels, physical activity, and sleep quality can provide healthcare professionals with a basis for developing more accurate medical recommendations. This approach encourages more proactive healthcare delivery by allowing potential health problems to be identified before they develop into more serious conditions (Nurfaidah et al., 2026).

Despite these benefits, the implementation of AI in telemedicine also presents several challenges that require careful consideration. One of the main concerns involves the potential misuse of medical data and the protection of patient privacy. Since AI performance largely depends on the datasets obtained from patients, the security of data storage, processing, and utilization becomes an essential issue. Therefore, data management must comply with information security principles and patient confidentiality requirements to ensure that technological advancement does not compromise patients' rights (Nurfaidah et al., 2026).

Another challenge concerns algorithmic bias and the limited generalizability of AI models. Many AI systems are developed using datasets derived from specific populations in Europe and East Asia, which are predominantly Caucasian and East Asian. This limitation may reduce their accuracy when applied to more diverse populations, including Indonesian society (Rossi & Rehman, 2025). In addition, the transition from conventional paper-based administration to digital healthcare systems remains a significant obstacle. The continued reliance on physical documents, limited internet connectivity, inadequate digital literacy among some healthcare personnel, and insufficient infrastructure create challenges for the implementation of electronic health records in Indonesian hospitals (Mujtahidah & Rachman, 2026).

3.2. Patient Accountability and Legal Protection in the Use of AI in Telemedicine Services

Indonesia has not yet established a specific legal framework governing the use of Artificial Intelligence in healthcare services. Existing regulations remain sectoral and are distributed across various legal instruments concerning healthcare, personal data protection, electronic systems, and medical devices. This fragmented regulatory framework indicates the absence of specific provisions addressing AI applications in healthcare, potentially creating legal uncertainty regarding the allocation of liability among parties in cases involving misdiagnosis, misuse or leakage of patient data, and other legal disputes arising from AI-based telemedicine services (Rayyan & Simarmata, 2025). Despite the absence of specific regulations, the use of AI in healthcare continues to expand due to its potential to support medical advancement and address the shortage of doctors, particularly medical specialists, in Indonesia. Therefore, an important step is to examine how existing Indonesian laws accommodate the use of AI in medical services, particularly telemedicine. This examination is necessary to identify the legal responsibilities of each party while ensuring that technological development remains consistent with the principles of patient protection and legal certainty.

The constitutional foundation for patient protection is established in Article 28H of the 1945 Constitution of the Republic of Indonesia, which recognizes healthcare as a fundamental human right that must be guaranteed by the state. This provision requires the government to ensure that every citizen has access to quality, safe, and affordable healthcare without discrimination. It also serves as the constitutional basis for Law No. 17 of 2023 concerning Health, together with its implementing regulations, which establish the responsibilities of healthcare providers and protect patients' rights to receive fair, equitable, and medically appropriate healthcare services (Nurnaeni & Bachri, 2024).

In AI-based telemedicine, legal accountability involves several parties and is not limited to medical personnel or hospitals but also extends to online healthcare platforms and AI technology providers. Each party has distinct responsibilities depending on its role in delivering healthcare services. Medical personnel, as defined in Article 1, Paragraph 6 of the Health Law, are individuals who dedicate themselves to the healthcare sector, possess professional attitudes, knowledge, and skills acquired through medical or dental education, and have the authority to provide healthcare services. In modern medical practice, AI is increasingly used to improve efficiency and support medical decision-making, including patient diagnosis and medication recommendations. However, the use of AI does not transfer professional responsibility from medical personnel to the technology itself. Medical professionals remain legally accountable because they are responsible for evaluating AI-generated recommendations and making the final decisions concerning patient care (Rayyan & Simarmata, 2025).

This responsibility is reinforced by Article 291(1) of the Health Law, which requires medical professionals and health workers to comply with professional standards, healthcare service standards, and standard operating procedures (SOPs). Accordingly, where the SOPs established by a healthcare facility, as referred to in Article 291(3) of the Health Law, designate AI merely as an auxiliary tool that requires evaluation by the medical professional using it, failure to conduct such an evaluation may constitute professional fault. Such conduct may also be classified as a disciplinary violation under Article 1, Point 5 of Ministry of Health Regulation No. 3 of 2025. Furthermore, where a disciplinary violation arises from non-compliance with applicable SOPs, Article 308(1) of the Health Law provides that medical professionals suspected of committing unlawful acts in healthcare services that may be subject to criminal sanctions must first obtain a recommendation from a disciplinary panel. The importance of professional oversight is also supported by research in the United States, which found that even experienced radiologists interpreting mammograms may experience automation bias when assisted by AI-based systems. This finding highlights the risks of excessive reliance on automated recommendations and the importance of human supervision in maintaining patient safety and diagnostic accuracy (Dratsch et al., 2023).

Hospitals may also bear legal responsibility for malpractice involving AI in healthcare services. Article 193 of the Health Law establishes hospital liability for losses resulting from negligence committed by their healthcare personnel. Meanwhile, Article 222(3) of the Health Law refers to personnel as individuals whose work is recognized within the educational process for medical and health personnel as part of their career development. Hospital liability may also be examined through the doctrine of vicarious liability, particularly when hospitals operate as corporations or legal entities. Under this doctrine, hospitals may be held responsible for negligence committed by individuals working under their authority. In the context of AI-based healthcare, this reasoning may be extended to the use of AI systems operated within hospital services, particularly where hospitals benefit from their operational efficiency while also bearing the risks arising from their implementation. This perspective emphasizes that adopting AI does not automatically eliminate hospital responsibility for the quality and safety of healthcare services (Muhafid et al., 2026).

Legal responsibility also extends to online healthcare platforms because their activities fall within the scope of electronic system operations. Article 1, Point 6a of Law No. 19 of 2016 concerning Amendments to Law No. 11 of 2008 on Electronic Information and Transactions defines an Electronic System Operator as any person, government institution, business entity, or member of the public that provides, manages, or operates an electronic system. Based on this provision, online healthcare platforms can be classified as electronic system operators and are therefore subject to the obligations established under the Electronic Information and Transactions Law. Furthermore, Article 38(1) of the ITE Law provides that any person may file a lawsuit against a party operating an electronic system and/or utilizing information technology that causes harm. This provision establishes a legal basis for holding online healthcare platforms accountable when their electronic systems or technological services cause losses to patients. Therefore, legal responsibility in AI-based telemedicine does not rest exclusively with medical professionals but may also extend to the platforms facilitating and operating these services.

In addition to medical personnel, hospitals, and online healthcare platforms, AI technology providers also have responsibilities concerning the reliability and proper functioning of the systems and algorithms they develop and supply. They must ensure that their technology can be used appropriately and reliably in healthcare services (Santhi & Damayanti, 2024). This obligation is reinforced by Article 15, Paragraphs (1) and (2) of the ITE Law, which require every Electronic System Operator to operate its electronic systems reliably and securely, ensure that they function as intended, and accept responsibility for their operation. AI technology providers may also be classified as business entities under Law No. 8 of 1999 concerning Consumer Protection. The law defines a business entity as any individual or business entity, whether incorporated or unincorporated, established and domiciled or conducting activities within the jurisdiction of the Republic of Indonesia, independently or jointly through an agreement to carry out business activities in various economic sectors. Consequently, AI providers operating within the healthcare sector may be subject to the consumer protection obligations imposed on business entities.

Their liability is further regulated under Article 19 of the Consumer Protection Law, which requires business entities to provide compensation for damage, contamination, and/or losses suffered by consumers as a result of consuming goods and/or services produced or traded by them. Such compensation may take the form of refunds, replacement of goods or services of equivalent value, medical treatment, and/or other compensation in accordance with applicable laws and regulations. Patients, as individuals whose right to adequate healthcare is guaranteed by the state, are entitled to legal protection when the services they receive fail to meet the agreed standards or are not delivered appropriately, provided that they have fulfilled their obligations and complied with applicable healthcare procedures. In such circumstances, business entities are required to provide compensation, damages, and/or reimbursement. This entitlement is reflected in Article 4, Paragraph (8), in conjunction with Article 7, Letters (f) and (g), of the Consumer Protection Law. Furthermore, Article 19, Paragraph (3), stipulates that compensation must be provided within seven days after the date of the transaction (Andriantom, 2025).

4. Conclusion

The use of Artificial Intelligence in telemedicine services presents significant opportunities for the healthcare sector in Indonesia through major innovations. AI is applied in various cutting-edge forms, ranging from advanced online medical symptom assessments to enabling real-time remote surgical guidance. The presence of AI has proven to reduce healthcare costs without compromising quality, simplify complex administrative processes, and provide predictive analytics for the prevention of chronic diseases. However, despite its significant benefits, the effectiveness of AI still faces several real challenges, such as the transition from conventional procedures to digitalization, the risk of misdiagnosis due to algorithmic bias, and threats to patient data security.

Given the potential errors arising from the use of AI, a key question arises regarding legal liability for losses incurred by patients, especially since current Indonesian law does not yet address this issue. However, the absence of specific legislation should not be an excuse for failing to protect patients' rights to safe healthcare services a right enshrined in the Constitution as a fundamental human right. This legal vacuum can be addressed by interpreting existing regulations such as the Health Law, the Information and Electronic Transactions Law, and the Consumer Protection Law to guarantee patients' rights to safe medical care. Based on these legal instruments, liability for risks or losses resulting from AI use can be proportionally allocated to various parties according to their respective roles. The government should consider introducing specific regulations and local data validation by the Ministry of Health to ensure the safety and reliability of the system. In addition, all stakeholders from medical personnel, hospitals, and technology providers to patients must play a role in oversight, transparency, and education to prevent risks and protect patients.

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