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CONSTRUCTION OF LEGAL LIABILITY FOR ANALYSIS ERRORS IN ARTIFICIAL INTELLIGENCE SKIN ANALYSIS AT AESTHETIC CLINICS IN INDONESIA

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ABSTRACT

The integration of artificial intelligence (AI) into skin analysis at aesthetic clinics in Indonesia offers significant transformations in diagnostic precision. However, the rapid adoption of this technology has not been accompanied by adequate specific regulations, creating legal uncertainty regarding the distribution of responsibility in the event of system failure. This study uses a normative juridical or doctrinal legal research method with a statute approach and a conceptual approach. The legal materials were analyzed qualitatively using a descriptive-analytical method and legal reasoning. The results show that AI Skin Analysis is not an independent legal subject and its output cannot replace the professional authority of the doctor. This position is determined by the legal framework governing health services, professional standards, electronic systems, and patient protection, including Law Number 17 of 2023 concerning Health, Law Number 8 of 1999 concerning Consumer Protection, Law Number 1 of 2024 concerning Electronic Information and Transactions, and Law Number 27 of 2022 concerning Personal Data Protection. Accordingly, the legal liability of the doctor is primarily determined by whether the AI output has been professionally verified and integrated into the clinical assessment in accordance with the applicable professional standards, while the liability of the clinic relates to the provision, governance, security, and oversight of the AI system used in health services. Patient protection includes the right to obtain adequate information, personal data protection, and access to legal remedies when a violation of legal or professional obligations causes harm. Accordingly, legal liability for AI-assisted diagnostic errors cannot automatically be imposed on the doctor or the clinic solely because an AI error has occurred, but must be determined by examining the source of the error, the obligations of each party, the presence or absence of negligence or other legal violations, and the causal relationship between the violation and the harm suffered by the patient.

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INTRODUCTION

A doctor's responsibility is firmly rooted in the synergy between ethical values and the professional mandate arising from legal interaction with patients, whether established through a therapeutic agreement or by regulatory instruction. Within this relationship, a clinician is obliged to carry out their duties under the shelter of rigid professional standards and ethical protocols. If an act is found to contravene legal rules, the doctor concerned will face cumulative sanctions, covering the civil, criminal, and even administrative law domains. On the other hand, issues relating to the degradation of professional morality fall under the authority of the ethics and disciplinary tribunals, namely MKEK and MKDKI. The urgency of compliance with these regulations becomes the central point in every medical dispute, because legally, an error in diagnosing a disease that arises from negligence toward standard procedures will immediately be determined as malpractice (Mauli, 2018).

The importance of strict oversight of medical professional standards has now become a major focus, particularly because of the high rate of errors in establishing diagnoses in clinical settings, which constitutes a serious obstacle to the development of the medical world (Timah et al., 2026). This phenomenon frequently befalls patients with unusual (atypical) clinical indications, thus complicating the process of accurately identifying the disease. Juridically, if a medical practitioner commits an error in the diagnostic process, legal liability must be enforced. This aligns with the universal principle that every individual is not only responsible for the losses resulting from their active conduct, but must also bear the burden of the negative impacts arising from negligence or a lack of vigilance in carrying out their duties (Daeng et al., 2023).

In order to suppress the potential for lapses originating from human factors, the integration of artificial intelligence has arrived and triggered a fundamental overhaul in the landscape of medical services in Indonesia. This technology offers advantages in detecting disease through rapid and precise data processing, which in turn is able to boost the effectiveness and quality of care. Nevertheless, this innovation is not without gaps; it brings new threats in the form of medical identification errors triggered by algorithmic failure, inaccuracy of data input, and even systemic malfunction that risks being fatal to patient safety. The characteristics of these machine failures are sharply contrasted with ordinary human carelessness, thereby provoking fierce debate regarding traditional legal liability doctrine, which thus far has centered only on the acts of human subjects (anthropocentric) (Prayuda & Mahendra, 2026).

The rigidity of medical liability doctrine, which thus far has been firmly fixed on the human figure as the center of fault (anthropocentric), is now beginning to falter under the onslaught of technological innovation. In the realm of cosmetic dermatology, the use of AI Skin Analyzer devices has shifted traditional disease detection conventions through features for mapping pigmentation and skin structure that operate automatically, instantly, and accurately. Although this technology is capable of accelerating productivity in modern beauty centers, this innovation simultaneously opens a fairly wide chasm of legal vacuum. That condition becomes increasingly complicated when a systemic malfunction occurs in the algorithm that results in physical injury to the user, while on the other hand, current national health regulations still place all juridical responsibility solely on the personal interaction between the medical practitioner and the patient.

This lack of clarity ultimately gives rise to doubt as to which party must bear the juridical consequences when a digital device intervenes in determining clinical steps. A large question mark arises: is the malpractice a consequence of the doctor's carelessness as the controller of the device, a weakness in the clinic's management as the service provider, or purely the impact of a production defect that should become the responsibility of the technology manufacturer.

As of September 2026, the Indonesian health law framework has developed in accommodating the use of software-based technology in health services. This framework includes, among others, Law Number 17 of 2023 concerning Health and Law Number 8 of 1999 concerning Consumer Protection. The latest regulatory development is also reflected in Minister of Health Decree Number HK.01.07/MENKES/951/2026 concerning Guidelines for Marketing Authorization of Software-Based Medical Devices. The presence of this regulation shows that Indonesia has begun to build a more specific regulatory framework for software used in the health sector. However, the existence of this regulation has not automatically resolved the legal issues arising from the use of Artificial Intelligence (AI) in clinical decision-making. The use of AI Skin Analysis at aesthetic clinics, in particular, raises issues regarding the professional standard of care, the obligation of medical personnel to verify AI output, and the allocation of legal liability when AI-based analysis or diagnostic results contribute to patient harm. Accordingly, the legal issue does not relate solely to whether regulation exists, but also to the extent to which the prevailing legal framework can be applied and is adequate to govern health services that use AI (Prayuda & Mahendra, 2026).

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The concept of legal liability serves as the main foundation for determining which party must bear the legal consequences when an act, negligence, or technological process causes harm. In health services, legal liability is closely related to medical negligence, particularly when medical personnel fail to meet the applicable professional standards, service standards, or duty of care. The presence of AI in the process of AI-assisted decision-making adds a new dimension because clinical decisions may involve technological output developed or provided by third parties. AI is therefore not automatically placed as a legal subject that independently bears liability. Legal liability needs to be analyzed based on the acts, negligence, legal relationships, and obligations of each party involved in the use of the technology. This framework encompasses the roles of medical personnel, aesthetic clinics, and AI technology providers in the development, provision, implementation, oversight, and use of AI output.

This issue is increasingly relevant as the use of Artificial Intelligence in dermatology and aesthetic medicine develops. Previous studies have mostly discussed the capability of AI technology to perform detection, classification, and analysis of skin conditions rather than the legal consequences of its use in clinical practice. (Daneshjou et al., 2021) showed that limited dataset transparency and the potential for algorithmic bias can affect the reliability of AI application in dermatology. Meanwhile, (Daneshjou et al., 2022) found differences in the performance of dermatology AI systems across groups with different skin tone characteristics. In the context of aesthetic medicine, (Thunga et al., 2025) and (Al-Dhubaibi et al., 2025) explained that AI has been used for skin analysis, facial analysis, treatment personalization, and clinical decision-making. Nevertheless, its application still faces issues related to ethics, privacy, bias, validation, and regulatory oversight.

From the perspective of legal liability, the use of AI in medical diagnosis raises the question of how liability should be allocated when an AI-assisted decision results in patient harm. (Jobson et al., 2022) identified legal and ethical issues in the use of AI for diagnosing skin conditions, particularly relating to clinician liability and the possibility of technological error. (Cestonaro et al., 2023) also showed that the use of AI algorithms in medical diagnosis involves various parties, including health workers and technology developers, making it more complex to determine the responsible party when an error occurs. (Bottomley & Thaldar, 2023; Eldakak et al., 2024; Fotheringham & Smith, 2024; Mello & Guha, 2024) subsequently discussed liability risks in the use of AI in health services and showed that liability can arise from different sources depending on the role of each party and the conditions that caused the patient harm. These findings show the importance of distinguishing between professional negligence in the use or interpretation of AI output, failures of oversight and governance by health service institutions, and technological defects or failures that may relate to the technology provider.

In the Indonesian context, the development of regulation concerning software-based medical devices is an important part of the legal analysis of the use of AI Skin Analysis. Minister of Health Decree Number HK.01.07/MENKES/951/2026 concerning Guidelines for Marketing Authorization of Software-Based Medical Devices is a regulatory development that needs to be considered together with other health law provisions. However, the existence of a regulatory framework for software-based medical devices has not specifically determined how legal liability is allocated when an AI Skin Analysis system produces an erroneous analysis and that result contributes to patient harm at an aesthetic clinic. Therefore, the legal analysis needs to be directed at the relationship between the prevailing regulatory framework, professional obligations, the clinical decision-making process, and the liability of each party involved in the provision and use of AI Skin Analysis.

Although research on AI in dermatology, aesthetic medicine, and legal liability in health services continues to develop, previous studies have not specifically examined the legal regulation of AI Skin Analysis in aesthetic clinic practice in Indonesia while also constructing the allocation of legal liability for AI-based analysis or diagnostic errors. The research gap of this study lies in the normative examination of the application of the Indonesian legal framework to the use of AI Skin Analysis and the construction of legal liability based on the roles and legal relationships of each party, namely medical personnel, aesthetic clinics, and AI technology providers. The novelty of this study lies in the construction of a legal liability framework for the use of AI Skin Analysis in aesthetic clinic practice in Indonesia by integrating the concepts of legal liability, medical negligence, AI-assisted decision-making, liability allocation, and the Indonesian health law framework, including the latest regulatory developments concerning software-based medical devices.

Based on the above description, this study formulates two research questions: (1) how is the use of AI Skin Analysis in aesthetic clinic practice regulated under the prevailing Indonesian legal framework, including regulatory developments concerning software-based medical devices? and (2) how is legal liability allocated among medical personnel, aesthetic

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clinics, and AI technology providers when erroneous AI-based analysis or diagnostic results cause harm to patients? These two questions are used to analyze the relationship between AI-assisted clinical decision-making, the professional standard of care, institutional liability, and technology-related liability within the Indonesian legal framework.

METHOD

This study was carried out using the type of normative legal research or doctrinal research, which places its main emphasis on library study as the principal basis of its examination. In line with the thinking of Johny Ibrahim, this study specifically focuses on the analysis of rules, norms, and the synchronization of positive legal regulations relating to medical practice and information technology (Ibrahim, 2006). In order to dissect the legal problem comprehensively, the researcher uses a statute approach and a conceptual approach. The statute approach is carried out by conducting an in-depth examination of various national legal instruments, such as Law Number 17 of 2023 concerning Health and Law Number 8 of 1999 concerning Consumer Protection, in order to map the juridical boundaries in the use of technology in the health sector. Meanwhile, the conceptual approach is applied to explore understanding of the theory of legal liability and the doctrine of medical malpractice through the references of legal experts, considering that there remains a regulatory vacuum that explicitly governs artificial intelligence entities as legal subjects.

The process of collecting legal materials in this study was carried out through the method of inventorying relevant library materials, covering primary legal materials sourced from legislation as well as secondary legal materials consisting of scientific literature, legal journals, and the products of scholars' legal thought. This is consistent with the principle of normative legal research, which places law as norms, theories, and principles that must be explored through the literature in order to answer the legal issue being faced (Soekanto & Mamudji, 2015). Subsequently, the collected legal materials were analyzed qualitatively through a descriptive-analytical technique. The analysis was carried out by identifying, classifying, and interpreting statutory provisions, legal principles, doctrines, and concepts of legal liability relevant to the research problem. The primary and secondary legal materials were then examined systematically through the statute approach and the conceptual approach to find the relationship between legal norms, the obligations of the parties, and the forms of legal liability in the use of the Artificial Intelligence Skin Analyzer. Furthermore, legal reasoning was carried out by connecting the prevailing norms with the legal issue under study, including the possibility of professional negligence, system failure, and the allocation of liability among medical personnel, aesthetic clinics, and technology providers. The results of this analysis were then arranged systematically to obtain juridical arguments and conclusions regarding the construction of legal liability for AI-based analysis or diagnostic errors at aesthetic clinics. At this stage, the researcher groups the legal materials in accordance with the main problems, then conducts in-depth legal reasoning to draw systematic conclusions. Through this process, the study is expected to be able to provide problem-solving as well as juridical clarity regarding who bears the burden of legal liability in the event of an Artificial Intelligence Skin Analyzer-based misdiagnosis at an aesthetic clinic.

RESULT AND DISCUSSION

Legal Regulation of the Use of Artificial Intelligence Technology in the Skin Analysis Process (AI Skin Analysis) in Aesthetic Clinic Practice in Indonesia

Artificial Intelligence (AI) is increasingly integrated into medical services, including dermatology, venereology, and aesthetic medicine. In aesthetic clinic practice, AI is primarily used to support skin condition assessment through digital image processing, facial scanning, and visual characteristic analysis. This technology can identify characteristics such as skin texture, wrinkles, pigmentation, and other observable skin conditions based on data processed by algorithms. In this context, AI Skin Analysis is positioned as a technological instrument for assessing skin conditions, not as a medical subject that independently holds the authority to establish a medical diagnosis or determine clinical action.

The distinction between skin condition assessment and medical diagnosis is legally significant. An AI Skin Analysis system can identify or classify visible skin characteristics, but such identification is not in itself a medical diagnosis. Likewise, algorithmic output regarding skin conditions cannot automatically be treated as a therapeutic recommendation with binding clinical consequences. Platforms such as Face++ and Visage Technologie show that AI can be used in aesthetic services to

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process consultation data, visual representations of the skin, and medical documentation, and then generate suggestions regarding possible products or procedures, including topical products, lasers, and microneedling (Saputri, 2025). Legally, however, the meaning and consequences of such output depend on how the AI output is verified, interpreted, and used by the doctor.

Based on this distinction, this study operationally defines AI Skin Analysis as an AI-based technological system that processes digital images and relevant patient data to identify or classify observable skin characteristics and produce assessment output as material to support clinical consideration. The output of such a system is not in itself a medical diagnosis, does not independently establish the presence of a disease, and does not determine the medical action that must be given to the patient. If the system generates suggestions regarding possible treatments, those suggestions remain technological output that requires professional verification and clinical consideration by the doctor. Accordingly, the final medical decision remains within the domain of medical practice. This distinction is important because legal liability for the use of AI cannot be determined solely on the basis of an error in algorithmic output.

The use of AI in skin analysis is beneficial because machine learning can process digital images and identify various visible skin characteristics, including acne, pigmentation disorders, and fine lines. However, the accuracy of such identification still depends on image quality, training data, algorithm design, and the representativeness of the data used in developing the system. Errors, bias, or limitations in representing population characteristics can affect the reliability of the resulting output (Febrianto, 2025).

From a legal perspective, these technical limitations do not automatically prove doctor negligence. An error in AI output is an initial fact that must first be connected to the professional decision-making process after the output is received. Therefore, the legal analysis needs to distinguish between algorithmic error, failure of doctor verification, error in clinical judgment, and the harm actually suffered by the patient. An AI error can occur without any fault on the part of the doctor. Conversely, the liability of the doctor may become relevant if the doctor does not carry out proper professional verification before using the AI output as the basis for medical action.

Accordingly, the first legal test lies in the relationship between the AI output and doctor verification. The output of AI Skin Analysis is supporting information and not a stand-alone clinical decision. Therefore, before such output is used in patient management, the doctor needs to assess its suitability with the patient's clinical condition and other relevant medical information. The greater the medical consequences that may arise from the use of the output, the more important it is that the professional verification process be carried out. Accordingly, the existence of inaccurate AI output cannot be directly equated with doctor negligence without first proving that the doctor did not carry out the verification that was professionally required under the circumstances.

The second legal test relates to doctor verification and clinical judgment. Verification does not merely mean ensuring that the AI system has produced an output, but includes assessing that output by considering the patient's history, physical examination, clinical findings, and other relevant medical information. Within this framework, AI functions as a decision-support instrument, while the doctor continues to exercise clinical judgment. Therefore, any AI output relating to possible treatment actions must be placed within the framework of medical standards and the doctor's professional judgment to ensure patient safety and the effectiveness of medical action.

The legal framework for the use of AI in Indonesia must then be read based on the legal position of each party, namely AI technology, the doctor, the health service facility, and the patient. Law Number 1 of 2024 as the second amendment to Law Number 11 of 2008 concerning Electronic Information and Transactions provides a general framework for electronic systems and places obligations regarding reliability, security, protection, and accountability on Electronic System Operators (PSE). However, the application of this framework does not mean that an AI system obtains the legal position of a doctor or becomes an independent holder of medical professional liability.

Accordingly, the legal issue lies not solely in whether specific regulation of AI exists, but in how the available legal framework allocates liability when AI is used as a supporting instrument in medical services. This analysis requires an assessment of the relationship between the AI system, the health service facility, and the doctor who interprets and uses the AI output. Although AI governance in Indonesia is still scattered across several legal instruments, including the ITE Law and

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Law Number 27 of 2022 concerning Personal Data Protection, this condition does not eliminate the possibility of applying existing legal principles to determine liability for particular acts or negligence (Hasanuddin et al., 2026).

In the context of aesthetic medical services, the distinction between skin condition assessment and medical diagnosis becomes increasingly important. AI Skin Analysis can identify visual characteristics of the skin, but determining whether those characteristics constitute a disease or medical condition requiring action remains a clinical matter. Therefore, the statement that the AI Skin Analyzer performs a function that is exclusively within the authority of the doctor needs to be qualified. Technology can perform identification or classification computationally, but such output is not in itself a valid medical diagnosis. The role of the doctor lies in verifying the output, integrating the results with clinical findings, and exercising clinical judgment before determining the appropriate medical action.

This framework also clarifies the application of the human-in-the-loop principle. Any AI Skin Analysis output that has the potential to influence medical decision-making must remain within the doctor's verification process. Doctor verification is not intended to make every algorithmic error a doctor's error, but to ensure that AI output is not treated as an autonomous clinical decision. Accordingly, the presence or absence of doctor verification is one relevant factor in determining whether the subsequent medical decision was made in accordance with the applicable professional standards.

The third legal test relates to negligence. Negligence cannot be inferred merely because the AI system produces inaccurate or incomplete output. The legal question is whether the doctor knew or reasonably should have known that the output was unreliable or insufficient, yet still used it without adequate verification. The assessment of negligence must therefore consider the concrete circumstances of the AI use, including the character of the AI output, its intended function, the doctor's opportunity to conduct verification, the availability of other clinical information, and the potential consequences of using the output.

The fourth legal test relates to causation and patient harm. Even if the doctor's verification or clinical judgment is assessed as inadequate, legal liability still requires a relationship between that act or negligence and the harm suffered by the patient. In this construction, inaccurate AI output is a factual starting point and not an automatic conclusion regarding legal liability. Liability becomes relevant only if there is a professional act or negligence that fulfills the elements of a violation of legal or professional standards and that violation has a causal relationship with the patient's harm.

This approach is important to avoid an overly broad attribution of liability. If an AI Skin Analysis system produces an inaccurate assessment, but the doctor discovers the discrepancy through clinical examination and does not use the erroneous output as the basis for medical action, the AI error cannot automatically be imposed on the doctor. Conversely, if the doctor does not carry out proper verification even though clinical information was available indicating that the AI output was unreliable, and the patient then suffers harm that has a causal relationship with that failure, the doctor's actions may be assessed based on the applicable professional and legal standards. Accordingly, the legal issue lies not solely in the occurrence of an AI error, but in the relationship between the technological output, the doctor's professional actions, and the patient's harm.

Patient protection also needs to be placed within the framework of consumer rights and the right to medical information. Under Law Number 8 of 1999 concerning Consumer Protection, patients as recipients of health services have an interest in obtaining correct and transparent information about the services they receive. In the use of AI Skin Analysis, transparency needs to include information about the role of AI in the assessment process, particularly when its output has the potential to influence clinical decision-making. Patients should not be placed in a position of regarding the results of an algorithmic assessment as a stand-alone medical diagnosis.

The use of AI also raises issues regarding the allocation of liability between medical personnel and technology providers. If an AI system produces inaccurate output, the legal analysis needs to distinguish whether the harm originates from a technological defect, weaknesses in system or data design, inappropriate use of the system, failure of doctor verification, or a combination of several of these factors. Accordingly, the existence of an AI error does not in itself determine that liability rests with the doctor, the clinic, the developer, or the technology provider. Determining liability requires an examination of the legal obligations of each party and the causal relationship between that party's act or negligence and the patient's harm.

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This distinction is increasingly important because AI output can be influenced by limitations in training data, algorithmic bias, image quality, and the complexity of individual medical conditions. Concerns regarding system security, data protection, algorithmic bias, patient autonomy, and increased health care costs have also been found in the literature (Hasanuddin et al., 2026).

However, such concerns cannot automatically be construed as proof of negligence in every use of AI. Accordingly, AI Skin Analysis needs to be placed as a supporting technological instrument under professional supervision, not as an autonomous medical decision-maker. The human-in-the-loop principle provides a normative basis that AI output must remain verified by the doctor and placed within the clinical judgment process. At the same time, this principle cannot be interpreted as a basis for imposing automatic liability on the doctor for every technological failure. Liability must be determined through a legal test that examines the AI output, the adequacy of doctor verification, the clinical judgment exercised, the presence or absence of negligence, and the causal relationship with the patient's harm.

Minister of Communication and Informatics Circular Letter Number 9 of 2023 concerning Artificial Intelligence Ethics can serve as an ethical guideline regarding objectivity and data security, although its normative character differs from binding statutory regulations. In aesthetic medical services, when AI output can influence decisions relating to patient safety, ethical guidelines alone are not sufficient to comprehensively determine the standards for use, verification, documentation, and liability for clinical processes that use AI. Therefore, a legal construction is needed that is able to differentiate liability based on the role of each party and the stage of technology use.

Finally, patient data protection is an integral part of the legal analysis because AI Skin Analysis can involve the processing of facial images, skin characteristics, and other information relating to identifiable patients. The application of Law Number 27 of 2022 concerning Personal Data Protection is relevant to the processes of collecting, processing, storing, and protecting patient data. However, this aspect of data protection needs to be distinguished from the issue of professional liability arising from the use of AI output. Both issues may arise from the same technological process, but they have different bases of obligation and forms of legal liability (Hasanuddin et al., 2026).

Accordingly, the use of AI Skin Analysis at aesthetic clinics in Indonesia must be understood through a layered legal construction. AI output is the assessment result produced by a technological system; physician verification determines whether the output can reasonably be used as supporting information; clinical judgment determines the medical action; negligence must be tested based on the doctor's conduct against the applicable professional and legal standards; while patient harm requires a causal relationship with the relevant violation. This construction affirms that AI error is not identical to doctor negligence. At the same time, the use of AI cannot be used as a basis for avoiding professional liability when there is a failure of verification, an error in clinical judgment, and patient harm that has a causal relationship. With this position, AI Skin Analysis is legally placed as a supporting instrument for skin condition assessment whose output must remain within the process of professional verification and the doctor's clinical judgment.

Forms of Legal Liability for Artificial Intelligence-Based Misdiagnosis That Causes Harm to Patients in Aesthetic Clinics

Medical action inherently carries risk for patients. That potential harm generally stems from two main factors: first, the emergence of complications that are unforeseen and beyond the control of medical prediction; second, negative impacts arising from the practitioner's error in carrying out their duties, namely when the procedure performed deviates from the professional standards and medical protocols that have been established (Hidayat, 2020). In the context of health law, a therapeutic transaction is defined as a contractual bond between a medical practitioner and a patient that gives rise to juridical consequences in the form of reciprocal rights and obligations. Although it has the status of an agreement, this relationship has distinctive characteristics that differentiate it from conventional contracts in society, especially in the aspect of the object being agreed upon. The crucial point in this agreement is not a guarantee of the final result in the form of a cure, but rather a commitment to the process of treatment or optimal medical endeavor. In other words, legally, what becomes the object of the transaction is the doctor's diligent effort (*inspanningsverbintenis*) in seeking and providing the therapy most relevant to the patient's condition, not the certainty of the disease being cured (Satria & Sidi, 2022).

The integration of artificial intelligence (AI) in the beauty industry has brought significant changes, especially in improving the precision of skin scanning and the efficiency of medical advice. However, these developments have not been

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accompanied by regulatory clarity; there is a regulatory gap concerning liability when an algorithm produces a misdiagnosis that adversely affects a patient. Fundamentally, the interaction between the patient and the beauty clinic still stands on the foundation of health law and the therapeutic agreement.

Within this framework, the medical practitioner bears the responsibility of exercising maximum endeavor (due care) in line with professional protocols. The problem is that the use of AI as a diagnostic aid now raises questions regarding the conventional allocation of responsibility. The main juridical **issue** lies in the status of AI itself: legally, this technology is not an independent legal subject that can be sued or held liable before a court. Consequently, when an algorithm fails to recognize a particular medical condition, the legal burden cannot be transferred directly to the machine, but rather still returns to the order of the legal relationship between the service provider and the patient, which remains conventional in nature.

The application of artificial intelligence technology in the beauty industry gives rise to overlapping responsibility between medical personnel personally and the clinic as an institution. From a juridical perspective, even though AI plays a role in presenting diagnostic data, the burden of legal accountability still rests on the parties that hold clinical and managerial authority. Within this scheme, the doctor occupies the central position as the final decision maker who holds full autonomy over every medical action, while the clinic is responsible in its capacity as the provider of facilities and the operational ecosystem. Clarifying this separation of roles is important to avoid a regulatory gap, especially when malpractice cases arise that are rooted in technical error or algorithmic system failure.

Within the frame of professional ethics and law, the doctor is positioned as the central figure who bears the burden of accountability through the learned intermediary doctrine. This standing affirms that even though artificial intelligence presents diagnostic data, that role is merely as a complementary instrument. The juridical obligation to conduct cross-validation, in-depth verification, and clinical adjustment based on the uniqueness of the patient's condition remains with the doctor.

A violation of this principle, for example when a doctor adopts erroneous algorithmic advice without proper anamnesis and physical examination, falls within the scope of medical negligence. Legally, AI technology does not have the capacity as an independent final decision maker because it is not equipped with professional autonomy. Therefore, AI's position as merely an "assistive tool" means that a doctor cannot rely on system failure as a defense. Before the law, final responsibility remains personal in nature and attaches to the doctor as the legal subject who holds control over that medical intervention (Gina, 2026).

The essence of this division of the legal burden can be portrayed as responsibility that is simultaneous and layered in nature. On the one hand, the doctor is the professional responsible for ensuring the appropriate use of AI for each individual patient. On the other hand, the clinic bears corporate responsibility for ensuring that the digital ecosystem it provides is suitable and operationally safe.

If a dispute occurs due to misdiagnosis, the clinic is the party that formally faces the patient's claim first. However, internally, a case analysis can be carried out to map the source of the failure: whether it constitutes human negligence in operating the device, or instead a systemic malfunction on the part of the facility provider. If the root of the problem leads to a software production defect, then a juridical avenue opens for the doctor and the clinic to file a counterclaim against the developer vendor, resting on the principle of product liability.

If a dispute arises from a misdiagnosis, the clinic is the party that formally stands at the front line in facing the patient's claim. However, internally, the case can be traced to map the source of the failure, namely whether the failure resulted from human negligence in operating the device or was instead caused by a systemic failure on the part of the facility provider. If the failure originates from the AI technology, product liability should not be limited to general software production defects, but needs to be analyzed based on the specific source of the technological failure.

This may include a design defect, namely when the inherent design of the AI system is inadequate to perform its intended clinical function; a software defect, which covers errors in coding, implementation, system function, or software updates; a training-data defect, when the data used to develop the system is incomplete, inaccurate, biased, or insufficiently representative of the population for which it is intended to be used; inadequate validation, when the system has not been adequately tested or validated before being used in clinical practice; failure to warn, when the developer or provider does not adequately disclose the limitations, risks, accuracy levels, or proper conditions of use of the system; and post-market failure,

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when problems arise after the system is deployed due to inadequate monitoring, maintenance, or updates, or a failure to respond to newly identified risks.

Accordingly, the allocation of legal liability should not be simplified into a distinction between the doctor and the machine, but must be determined based on the source of the failure, the legal obligations of each party, and the causal relationship between the defect and the harm suffered by the patient.

Artificial Intelligence (AI)-based misdiagnosis at aesthetic clinics can trigger legal consequences that are layered in nature for both doctors and clinics, covering administrative, civil, and criminal aspects. On the basis of Law Number 17 of 2023 concerning Health, this division of responsibility can be described as follows:

A. Administrative Responsibility

This responsibility relates to the obligation of clinics and medical personnel to fulfill quality standards, professional standards, and standard operating procedures. If the use of AI causes negligence in maintaining the quality of service or patient safety, the clinic as well as the medical personnel may be subjected to administrative sanctions. Article 189 paragraph (2) states that violations of the obligations of health service facilities (such as maintaining quality standards and patient safety) are subject to administrative sanctions. In addition, Article 283 paragraphs (3) and (4) mention that the head of a health service facility or medical personnel who do not carry out their obligations may be subjected to sanctions in the form of verbal reprimand, written warning, administrative fines, and/or revocation of license.

B. Civil Responsibility

Civil responsibility arises when a medical action causes harm to a patient. The patient has the right to claim compensation if negligence is proven. In general, on the basis of Article 273 paragraph (1) letter a, medical personnel obtain legal protection as long as they carry out their duties in accordance with professional standards, professional service standards, standard operating procedures, and professional ethics. Conversely, if a doctor is negligent in conducting clinical verification of AI results and causes harm, they may be sued civilly by the patient. The clinic may also be held civilly liable through the principle of corporate responsibility for harm that occurs as a result of the facilities provided.

C. Criminal Responsibility

Criminal responsibility constitutes a last resort (ultimum remedium) if the misdiagnosis results in serious impacts, such as disability or death. Article 435 mentions that any person who produces or distributes Medical Devices (including medical software/AI) that do not meet the standards of safety, efficacy/benefit, and quality may be punished with imprisonment of up to 12 years or a fine of up to Rp5,000,000,000.00. Article 440 paragraph (1) provides that the oversight (negligence) of medical personnel that results in serious injury or disability may be punished with imprisonment of up to 3 years. If that negligence results in death, the sanction becomes heavier in accordance with paragraph (2) of the same article.

Thus, the use of Artificial Intelligence (AI) in the AI Skin Analysis process does not eliminate the doctor's professional obligation to conduct assessment and medical decision-making. The doctor still has the obligation to assess the results provided by the AI system on the basis of the patient's clinical condition as well as the applicable professional standards. In the context of legal liability, AI is more appropriately positioned as a decision-support tool, not as a party that replaces the doctor's professional authority. (Pratami & Dzulfiqar, 2024) explain that the use of AI in medical diagnostics gives rise to problems regarding the authority to make diagnoses and the division of legal responsibility among medical personnel, health facilities, and AI system developers. Further, (Banja et al., 2022) explain that the use of AI in diagnosis can give rise to liability problems when doctors either follow or disregard AI recommendations and the patient subsequently suffers harm. Hence, doctors still have the responsibility to conduct verification and clinical consideration of AI output before making it the basis for determining a diagnosis or medical action.

That liability does not mean that every error relating to AI automatically becomes the doctor's responsibility. The source of the error needs to be traced on the basis of the process by which the harm occurred and the obligations of each party. (Hermawan & Jamaludin, 2025) show that AI-based misdiagnosis can originate from the doctor's clinical decision, limitations or defects of the algorithm, the quality of training data, or system limitations that are not disclosed to users. For that reason, imposing responsibility solely on the doctor is not always appropriate if the error in fact originates from an AI system that lies beyond the doctor's professional control. That view is in line with (Maliha et al., 2021) who state that the AI

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ecosystem in health services involves various parties and that conventional liability frameworks are not yet fully able to accommodate the risks arising from the interaction among doctors, health institutions, and AI technology.

In the context of aesthetic clinics, responsibility can also attach to the clinic as a health service facility because the clinic is not merely a place where doctors use technology, but is an institution that provides and organizes services for patients. Clinics need to ensure that the AI Skin Analysis system used is in accordance with the purpose of the service, that clear procedures for use are available, that maintenance of the device is carried out, and that there is a mechanism for overseeing the use and verification of AI results. This becomes important because AI-based misdiagnosis can emerge not only as a result of doctor error, but also as a result of system failure, algorithmic bias, data limitations, or lack of clarity in oversight mechanisms. (Fahima, 2026) affirms that errors in AI-assisted diagnosis need to be distinguished between medical malpractice originating from the doctor's actions and system failure originating from the technology or the governance of the system. Thus, if the patient's harm is caused by the doctor's failure to conduct verification or by using AI results in a manner not in accordance with professional standards, liability can be directed at the doctor. Conversely, if the harm relates to system failure or to weak oversight and governance of AI use at the clinic, then liability can involve the clinic and, in accordance with the source of the error, the developer or provider of the AI technology.

CONCLUSION

The use of Artificial Intelligence (AI) Skin Analysis at aesthetic clinics in Indonesia shows that the issue of legal liability cannot be determined solely on the basis of an error in the system's output. Legally, AI remains a supporting instrument for assessment and not a legal subject with independent authority to establish a diagnosis or medical action. Therefore, AI output used in health services must still undergo doctor verification and become part of clinical judgment before being used as the basis for medical action.

The legal implications of the use of AI Skin Analysis can be constructed in several layers. First, the implications for medical personnel, namely the obligation to verify AI output, assess its suitability with the patient's clinical condition, and make decisions based on the applicable professional standards and service standards. Failure to carry out adequate verification can become a basis for liability if negligence and a causal relationship with patient harm are proven. Second, the implications for the clinic as a health service facility, namely the obligation to ensure the suitability of the system, procedures for use, maintenance, oversight, and governance of the technology used in services. Third, the implications for the technology provider or developer, particularly if the harm can be traced to a system defect, design limitation, or technological failure that lies beyond the doctor's professional control. Accordingly, the allocation of liability must be based on the source of the error, the legal obligations of each party, and the causal relationship with patient harm, not solely on the fact that the AI produced an erroneous output.

From the perspective of forms of liability, the use of AI Skin Analysis can give rise to administrative, civil, and criminal consequences in accordance with the type of violation and the resulting impact. Administrative liability relates to compliance with service standards, patient safety, and the governance of health facilities. Civil liability relates to patient harm arising from acts or negligence that can be legally proven. Meanwhile, criminal liability applies when the elements of a criminal offense are fulfilled in accordance with the applicable legal provisions. This framework shows that an algorithmic error does not automatically become a doctor's error, but it also cannot be used to eliminate the doctor's professional obligations when there is a failure of verification or use of AI that is not in accordance with professional standards.

This study has several limitations. First, the study uses a normative legal approach, so the analysis is primarily based on statutory regulations, legal concepts, doctrines, and available literature. Therefore, this study has not empirically examined patterns of AI Skin Analysis use at aesthetic clinics across various regions of Indonesia. Second, the study has not conducted a technical examination of the algorithms, datasets, accuracy levels, or audit trail mechanisms of any particular AI system. Third, the study has not tested the application of this liability construction through court decisions or concrete disputes specifically relating to AI Skin Analysis errors in Indonesia. These limitations mean that the findings are more appropriately understood as a legal construction and argumentation, not as an empirical depiction of all aesthetic clinic practices in Indonesia.

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Future research can be directed toward empirical studies on the implementation of AI Skin Analysis at aesthetic clinics, particularly regarding doctor verification procedures, clinic oversight mechanisms, documentation of AI output, and forms of patient consent. Further research can also examine the liability of technology providers based on the characteristics of algorithmic defects, data quality, and system security, as well as compare Indonesian regulation with other jurisdictions that have developed governance frameworks for health AI. In addition, research can develop a more operational regulatory model concerning the human-in-the-loop obligation, documentation of AI use, transparency to patients, system audits, and evidentiary mechanisms when harm occurs due to the use of AI in aesthetic services.

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