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# IMPACT OF ARTIFICIAL INTELLIGENCE ON THE DOCTOR-PATIENT RELATIONSHIP IN DERMATOLOGY: A NARRATIVE REVIEW.

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## Abstract

***Background:*** Artificial intelligence (AI), particularly convolutional neural networks and large language models, is increasingly being integrated into dermatology for image-based diagnostics, teledermatology, and patient-facing decision support. While these technologies may improve clinical efficiency and expand access to dermatologic care, their influence on the dermatologist–patient relationship remains uncertain. ***Objectives:*** To synthesize current evidence regarding the impact of AI on trust, communication, empathy, professional autonomy, and ethical practice within the dermatologist–patient relationship. ***Materials and Methods:*** A narrative review of English-language literature published between January 2018 and March 2026 was conducted using PubMed, Scopus, and Google Scholar databases. Original research articles, systematic reviews, and authoritative commentaries addressing AI applications in dermatology and their implications for patient experience and clinical practice were included. Selection was based on relevance and methodological quality. ***Results:*** AI demonstrated improved diagnostic accuracy in specific dermatological tasks and enhanced access to care through teledermatology and asynchronous triage systems. Patients generally showed greater acceptance of AI when used as a physician-support tool rather than as an independent diagnostic system. Key concerns identified included reduced human interaction, automation bias, limited algorithmic performance in darker skin types, data privacy and informed consent challenges, and unresolved medico-legal accountability issues. ***Conclusion:*** AI should be implemented as an adjunct to dermatological practice within an augmented-intelligence framework rather than as a replacement for clinicians. Maintaining empathy, ensuring clinician oversight, achieving equitable performance across diverse skin types, and establishing transparent ethical and regulatory governance are critical to preserving the integrity of the dermatologist–patient relationship.

**Keywords:** artificial intelligence; dermatology; doctor-patient relationship; teledermatology; trust; ethics; algorithmic bias.



## INTRODUCTION

Artificial intelligence (AI), and in particular deep-learning approaches based on convolutional neural networks, has produced some of the most striking proof-of-concept results in clinical medicine over the past decade. The seminal work of Esteva and colleagues, who trained a deep neural network to classify skin cancer at a level comparable with that of board-certified dermatologists, established image-based dermatology as a paradigmatic test bed for medical AI [1]. Subsequent multi-class classifiers, mobile-phone teledermoscopy systems and large language models have extended this trajectory, and contemporary reviews now describe AI applications across diagnostic, triage, treatment-planning and patient-education domains [2,3].

Dermatology is unusually well suited to AI for two reasons. First, much of the diagnostic process is visual, generating standardised image data on which deep-learning systems can be trained and benchmarked [1,4]. Second, the specialty has a long tradition of teledermatology, providing a ready clinical pathway through which automated tools can be embedded into routine care [5]. Even so, dermatological practice is not reducible to image classification: it includes the management of chronic, often disfiguring or stigmatising conditionssuch as acne, psoriasis, atopic dermatitis and vitiligoin which the psychosocial burden of disease is substantial and the therapeutic relationship is itself part of the treatment [6,7].

This dualitya specialty that is technically well matched to AI but clinically dependent on continuity, empathy and shared decision-makingmakes dermatology a particularly informative setting in which to examine how AI reshapes the doctor-patient relationship [8]. Patient surveys consistently show that public attitudes toward AI in dermatology are conditional rather than categorical: trust is greatest when AI is used by, rather than instead of, a physician, and concerns about confidentiality, transparency and equity are pervasive [9,10]. Concurrently, large-scale data on AI performance across skin types have raised important questions about algorithmic fairness and the representativeness of training datasets [11,12].

The doctor-patient relationship in dermatology may therefore be expected to evolve in several directions simultaneously: greater patient autonomy and information access on one hand, and new pressures on trust, accountability and empathic engagement on the other [8,13]. The aim of this narrative review is to synthesise the available evidence on these effects, with emphasis on trust and therapeutic alliance, diagnostic decision-making, communication and empathy, patient autonomy, privacy and ethics, equity, and the dermatology-specific implications for teledermatology, cosmetic practice and chronic-disease care.

## MATERIALS AND METHODS

This is a narrative, rather than systematic, review and the methods described here are presented for transparency rather than as a substitute for full systematic-review methodology [14]. The English-language literature published between 1 January 2018 and 30 March 2026 was searched in PubMed, Scopus and Google Scholar. Search terms combined controlled vocabulary and free-text terms relating to artificial intelligence ("artificial intelligence", "deep learning", "machine learning", "convolutional neural network", "large language model"), dermatology ("dermatology", "teledermatology", "skin cancer", "dermatoscopy") and the patient-facing dimensions of care ("doctor-patient relationship", "trust", "empathy", "shared decision-making", "patient perspectives", "ethics", "bias", "privacy"). Reference lists of key articles were screened for additional sources, and seminal pre-2018 publicationssuch as the foundational neural-network paper by Esteva et al. [1]were retained where they remained essential to the narrative.

Original quantitative studies, qualitative research, systematic reviews, narrative reviews and authoritative commentary or guidance were considered for inclusion. Studies addressing the application of AI in non-dermatological contexts were included only when they offered transferable conceptual insights, for example on automation bias [15] or medico-legal accountability [16]. Selection prioritised relevance to dermatology, methodological rigour and contribution to the conceptual framework of the review. As this is a narrative synthesis, no formal data extraction or risk-of-bias assessment was performed; this limitation is acknowledged in the

## FINDINGS

### Trust and the therapeutic alliance

Patient confidence in AI-assisted dermatological decisions is consistently higher when those decisions are interpreted, communicated or endorsed by a physician than when AI operates autonomously [9,10]. Survey data from large patient cohorts in the United States and the United Kingdom suggest that trust in AI is conditional on physician oversight, transparent explanation of how an AI tool reached its conclusion and the perception that the clinician retains ultimate responsibility for the decision [9,10,17]. Within this framework, what has emerged is best characterised as a hybrid model of trust, in which the patient extends confidence both to the clinician and, indirectly, to the algorithm endorsed by that clinician [17]. When AI is used independently, or when its role is opaque, trust in the encounter declines, and excessive reliance on AI by clinicians may undermine perceived accountability and weaken the therapeutic alliance [9,17].

### Diagnostic accuracy and clinical decision-making

In selected, well-defined tasksprincipally the classification of pigmented and non-pigmented skin lesionsdeep-learning systems achieve diagnostic accuracy comparable to that of experienced dermatologists [1,18]. International reading studies and external validations have, however, made clear that performance varies substantially with image quality, lesion type, patient demographics and the conditions of deployment [12,18]. Two clinical-reasoning concerns recur in the literature. The first is automation bias: the tendency of clinicians to defer to algorithmic outputs even when those outputs are incorrect, with the strongest effect observed in less-experienced clinicians [15]. The second is the risk that routine reliance on AI for first-pass interpretation may erode independent clinical reasoning over time, although empirical evidence on this skill-decay hypothesis remains preliminary [19]. Direct comparisons of AI-generated and physician responses to dermatological queries have shown important differences in both content and reasoning quality, reinforcing the need for human validation before clinical deployment [19].

### Communication and empathy

Effective communication is integral to dermatological care because of the high psychosocial burden associated with visible skin disease [6]. Recent studies of large language models have shown that AI systems can generate responses that patients perceive as empathic, sometimes more so than terse physician answers in asynchronous text-based exchanges [20]. This

perceived empathy, however, is the product of stylistic featureswarmth of language, length, willingness to acknowledge feelingsrather than of genuine emotional understanding or shared experience [20,21]. Critical clinical encounters in dermatology continue to depend on the integration of non-verbal cues, contextual knowledge and longitudinal familiarity with the patient, none of which current AI systems are equipped to provide [21]. AI tools may therefore complement clinician communicationparticularly for routine information deliverybut they remain inadequate substitutes for human empathic engagement.

**Patient autonomy and changing roles**

AI-driven tools, including symptom-checker apps, image-based smartphone applications and conversational agents, have substantially increased patient access to medical information [8]. A growing proportion of dermatology patients now arrive at consultation having sought a preliminary AI-based opinion, and this trend appears likely to continue [22]. The net effect is greater patient participation in decision-making and a partial flattening of traditional clinical authority. Within this changing landscape, the dermatologist's role is increasingly that of an interpreter, contextualiser and ethical custodian of the AI outputtranslating algorithmic probability into patient-relevant meaning, identifying error and ensuring that automated suggestions are integrated into a coherent management plan [16,22]. This evolution is not unique to dermatology, but the visual immediacy of skin disease makes the shift particularly visible to both clinicians and patients.

**Privacy, consent and ethical accountability**

AI systems in dermatology are trained on, and continually fed by, large volumes of high-resolution clinical and consumer images, often accompanied by structured metadata. This raises substantive concerns about confidentiality, the adequacy of informed consent, secondary use of data and cross-border data flows [5,16]. Medico-legal accountability for adverse outcomes attributable, in whole or in part, to AI advice remains an unsettled area of law and professional regulation [16]. The uncertainty itself can shape patient trust, as it is unclear to many patientsand indeed to many clinicianswho is responsible when an AI tool contributes to a diagnostic error [16,17]. Transparent governance frameworks, clear documentation of AI use in the medical record, and patient-facing disclosure are likely to be necessary components of any sustainable model.

**Bias and equity**

Multiple analyses have shown that AI dermatological classifiers tend to perform less well on darker skin types, reflecting the underrepresentation of skin of colour in publicly available training datasets such as the ISIC Archive and HAM10000 [11,12]. Without deliberate correction, deployment of these tools risks compounding existing disparities in dermatological care [11]. Mitigation strategies include the assembly of more representative datasets, transparent reporting of subgroup performance, fairness-aware training methods and external validation in diverse populations before clinical implementation. Equity considerations are particularly salient in dermatology, where conditions such as keloid disease, hidradenitis suppurativa and certain pigmentary disorders disproportionately affect populations historically underrepresented in training data [11].

**Dermatology-specific implications**

**Teledermatology**

AI is already integrated into teledermatology workflows for image quality assessment, asynchronous triage and prioritisation of urgent cases, and may extend dermatological reach to underserved regions [3,5]. Within teledermatology, the doctor-patient relationship is mediated by both technology and asynchrony; transparent communication about AI's role and the limits of remote assessment is therefore particularly important.

**Cosmetic dermatology**

Patient satisfaction in cosmetic dermatology is heavily dependent on emotional support, expectation management and the negotiation of subjective aesthetic preferences [6]. These elements are largely beyond the current reach of AI tools, and clinical experience suggests that direct clinician engagement remains central to safe and satisfying cosmetic practice.

**Chronic dermatological disease**

The long-term management of chronic skin diseaseincluding psoriasis, atopic dermatitis, hidradenitis suppurativa and vitiligorequires sustained doctor-patient interaction, structured monitoring of disease trajectory and adjustment of treatment over time [6,8]. AI tools can contribute via remote severity scoring, treatment-adherence support and decision aids, but the relational continuity that underlies effective chronic-disease management cannot be automated.

## DISCUSSION

The literature surveyed converges on a coherent message: AI is a powerful adjunct to dermatological care that, when deployed thoughtfully, can enhance diagnostic accuracy, broaden access through teledermatology, and support patient autonomy and engagement [1,3,8]. At the same time, AI introduces or amplifies challenges around trust, empathic

communication, equity and ethical accountability [9,11,16,21]. The framing that best reconciles these findings is the concept of augmented intelligenceAI as a tool that supports, but does not replace, the clinicianarticulated in policy documents and editorials from major medical and dermatological bodies and increasingly reflected in regulatory practice [3,16].

From the perspective of the doctor-patient relationship, three implications stand out. First, transparency is foundational. Patients consistently express greater willingness to accept AI-assisted care when they are told what role AI played in their assessment and how its conclusions were arrived at [9,10]. Second, equity is non-negotiable. Models that perform less well in darker skin types or in populations underrepresented in training data risk widening rather than narrowing existing disparities [11,12], and routine deployment without subgroup validation should be discouraged. Third, the empathic and relational core of dermatological practiceparticularly in cosmetic and chronic-disease contextsremains a human task [6,21]. Even where AI generates output that patients find emotionally resonant, the underlying experience and continuity required for sustained therapeutic alliance are not simulated.

These conclusions are broadly consistent with frameworks proposed in adjacent specialties such as radiology and pathology, where similar narratives of augmented intelligence, automation-bias risk, and the need for prospective clinical validation have been articulated [15,18]. The dermatological literature adds two distinctive contributions: the unusually visible nature of patient-facing AI tools, given the visual character of skin disease, and the documented importance of skin-tone equity in algorithmic performance [11,12].

## CONCLUSION

Artificial intelligence is reshaping dermatological practice and, with it, the dermatologist-patient relationship. Used as an adjunct to clinical care, AI offers genuine improvements in diagnostic capability, access and patient engagement. Used in isolation or without attention to bias, transparency and ethical accountability, it risks eroding trust, equity and empathy. The dermatologist's evolving roleas interpreter, custodian and ethical guarantor of AI-assisted carewill be central to ensuring that the doctor-patient relationship is preserved, and ideally strengthened, by these technologies.

### Limitations

As a narrative rather than systematic review, it is subject to selection and interpretation bias and does not include formal risk-of-bias assessment, quantitative synthesis or pre-registered methodology. The field is evolving rapidly: large language models, multimodal foundation models and regulatory frameworks for AI in medicine are advancing on a timescale shorter than the typical literature-review cycle, and conclusions drawn here will require periodic re-evaluation. Patient-perspective evidence is geographically uneven, with most published surveys originating in high-income settings; the views and concerns of patients in low- and middle-income countrieswhere the burden of dermatological disease is substantialremain comparatively underrepresented.

### Future directions

Priorities for future research include prospective evaluation of AI tools embedded in real clinical workflows, with patient-reported outcomes capturing trust, satisfaction and perceived empathy alongside diagnostic accuracy; rigorous external validation of dermatological classifiers across the full spectrum of skin types; transparent reporting standards for clinical AI ; and the development of governance frameworks that articulate consent, accountability and explainability requirements specific to dermatological practice. Education of dermatologists, trainees and patients in the principled use of AI will be central to ensuring that gains in efficiency and reach are not purchased at the cost of the therapeutic relationship.

## DECLARATIONS

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