

REVIEW

The Role of Artificial Intelligence in the Development of Health Tourism: A Systematic Review

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Keywords: Artificial Intelligence, Health Tourism, Intelligent Systems, Intelligent Diagnosis and Treatment, Personalized Medical Services

ABSTRACT

Introduction: Health tourism is one of the rapidly growing industries worldwide, driven by the increasing demand for high-quality medical services at lower costs. In this context, artificial intelligence (AI), as an emerging technology, plays a crucial role in improving service quality, enhancing efficiency, and reducing costs associated with this field.

Objective: The aim of this research is to identify opportunities, challenges, and future trends in the application of AI in health tourism, providing a comprehensive perspective for policymakers, healthcare service providers, and professionals in this sector.

Methodology: This study is a systematic review conducted in accordance with PRISMA guidelines. A literature search was performed in reputable databases, including PubMed, Scopus, Web of Science, and Google Scholar, using keywords related to "artificial intelligence" and "health tourism." Studies published between 2010-2025 were reviewed.

Results: The findings of this study indicate that artificial intelligence has a significant impact on the development of health tourism. The most important applications of AI in this field include optimizing appointment scheduling and booking systems, intelligent diagnosis and treatment, personalized medical services, efficient management of international patients, and enhancing the patient experience. Additionally, the use of AI can lead to cost reduction, increased diagnostic accuracy, and improved quality of healthcare services for health tourists.

Conclusion: Artificial intelligence plays a significant role in improving and developing health tourism, leading to increased efficiency, cost reduction, and enhanced service quality. However, challenges such as implementation costs and ethical issues need to be addressed. The development of supportive policies and technological infrastructure can help effectively leverage this technology in health tourism.

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What do we already know about this topic?

AI technologies (machine learning, natural language processing, computer vision, recommender systems, and predictive analytics) are increasingly applied across healthcare and tourism separately. Prior studies have shown AI can improve diagnostic accuracy, personalize treatment and travel recommendations, optimize logistics and resource allocation, and enhance patient/customer experience. In health tourism specifically, existing literature documents use-cases such as patient triage, telemedicine follow-up for international patients, automated appointment scheduling, language translation for cross-border care, and marketing/patient-acquisition through AI-driven recommender systems. Gaps remain in integrating clinical safety standards, handling cross-jurisdictional legal/ethical issues, evaluating cost-effectiveness, and measuring long-term patient outcomes and satisfaction across international care pathways.

What is the main contribution to Evidence-Based Practice from this article?

This article synthesizes current evidence and presents an evidence-informed framework for implementing AI in health tourism that explicitly links AI functions to clinical quality, patient safety, and patient experience outcomes. We systematically map AI applications to measurable EB practice endpoints (e.g., diagnostic concordance, time-to-treatment, readmission rates, patient-reported outcome measures) and propose practical indicators and study designs for future evaluation. By highlighting methodological limitations in prior studies (small samples, lack of longitudinal follow-up, heterogeneous outcome measures), we offer concrete recommendations to improve the rigor of future evaluations, thus facilitating translation of AI interventions into safe, effective, and scalable health-tourism services.

What are this research's implications towards health policy?

Practical implications: Health providers and tourism operators should adopt the proposed framework to align AI deployment with clinical governance, informed consent, data protection, and cross-border care coordination. Policymakers should prioritize interoperable data standards and certification pathways for AI tools used in cross-border healthcare.

Authors' Contributions Statement:

FY conceived and designed the study, performed literature searches, screened and extracted data, and drafted the manuscript. RB contributed to study selection, data synthesis, and critical revision of the manuscript. All authors approved the final version and agree to be accountable for the integrity of the work.

Introduction

Health tourism, which refers to the travel of individuals to other countries to receive high-quality and cost-effective medical and health services, has emerged as a rapidly growing sector within the global tourism industry. This type of tourism has seen significant growth due to its economic and medical benefits, including access to advanced treatments and more affordable prices (Connell, 2023). According to predictions, health tourism is expected to become one of the largest global industries by 2030 (Smith & Tan, 2023).

In this context, Artificial Intelligence (AI), as a key technology, is playing a transformative role in enhancing healthcare services and optimizing processes within health tourism. AI, through the use of complex algorithms and machine learning, can improve both treatment and management processes, as well as enhance the experience of patients within this

sector (Jiang et al., 2022). Key applications of AI include intelligent diagnosis and treatment, predictive healthcare outcomes, optimization of scheduling and booking systems, and personalizing medical services (Zhang et al., 2023).

AI, by processing large amounts of data and analyzing it, can effectively help provide more accurate medical advice and reduce patient waiting times. This not only reduces healthcare costs but also improves the quality of care for health tourists (Chien et al., 2022). For instance, the use of deep learning systems in disease diagnosis and treatment simulation enables healthcare professionals to make better decisions and shorten patient recovery times (Williams & Li, 2023).

Moreover, AI can contribute to improving management processes and coordination between patients, doctors, and insurance companies. For example, AI systems can easily

coordinate appointments and online consultations, thus reducing the need for physical presence in hospitals and medical centers (Lee et al., 2024).

However, there are still barriers such as high implementation costs, ethical issues, and privacy concerns that hinder the widespread use of AI in health tourism. Additionally, there is a need to develop appropriate policies and global standards to ensure ethical use of patient data (Nguyen & Li, 2023). Specifically, there are concerns about the misuse of medical data and personal information that need to be carefully managed (Samaras et al., 2022).

This study aims to provide a systematic review of the existing research and evidence on the role of AI in health tourism. The paper will explore the opportunities, challenges, and various applications of this technology in the health tourism sector and offer solutions for its development and improved utilization.

Methodology

This study, a systematic review, was conducted according to the PRISMA guidelines and meta-analysis protocol (17) and its protocol was registered in PROSPERO. This study was conducted based on the studies conducted in the area of the subject under investigation in different regions of the world from January 2010 to November 2024, so it can be said that the geographical field of this study is not

limited to any country or region and includes studies from the whole world.

1. Article Search: A search was conducted in reputable databases including PubMed, Scopus, Web of Science, Google Scholar, and IEEE Xplore. Keywords such as "artificial intelligence," "health tourism," "AI in medical tourism," and "machine learning in healthcare" were used to identify relevant articles. The search focused on articles published between 2010 and 2024 (Table 1).

2. Inclusion Criteria: The selected articles had to address the applications of AI in health tourism and be scientifically valid, published in reputable journals. Articles unrelated to the topic, lacking full-text access, or of low quality were excluded from analysis. Studies with insufficient data or poor research quality were also eliminated.

3. Quality Assessment Process: The quality of the selected articles was assessed using standard quality assessment tools for systematic reviews, such as the AMSTAR and CASP criteria. This evaluation involved a comprehensive review of research methods, measurement scales used for effectiveness, and the accuracy of reporting.

4. Data Extraction: Data regarding the applications of AI in health tourism, treatment outcomes, challenges, and benefits were extracted and categorized. These data were analyzed in terms of methodology, types of AI used, and their outcomes.

Table1: Searched keywords and phrases

Search strategy		
keywords	artificial intelligence	Radiodermatitis OR Dermatitis OR Skin Reactions OR Side effects OR Skin Fibrosis OR Skin Damage
Search terms	(((health tourism ((fha[Filter]) AND (2010:2024[pdat]))) OR (AI in medical tourism) AND ((fha[Filter]) AND (2010:2024 [pdat]))) OR ("machine learning in healthcare")) AND ((((((artificial intelligence ((fha[Filter]) AND (2010:2024 [pdat])))))	

Results

604 were collected by keyword search. By repetition, 290 articles were excluded and 314 articles remained in the study. By examining the individual titles of the articles, 82 articles were excluded due to the lack of relevance of the title to the study objective and 232 articles

were included in the case study abstract. After reviewing the abstract, 160 articles were excluded and 72 articles were reviewed for final review of the article text, of which 58 studies were excluded due to lack of required quality, ultimately 14 articles remained in the study (Figure 1).

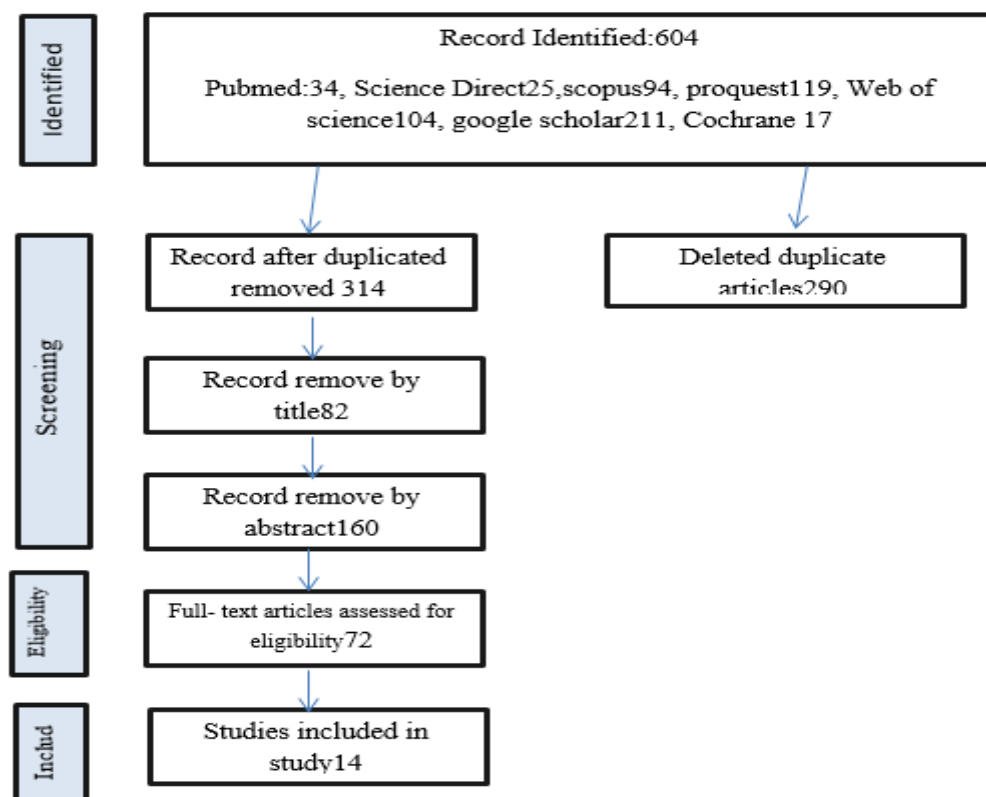


Figure 1. PRISMA graph of data retrieved from various databases based on inclusion and exclusion criteria

Results

The results of this systematic review indicate that artificial intelligence (AI) has a significant impact on improving the quality of health tourism services, reducing costs, enhancing patient experience, and optimizing treatment processes. Based on the reviewed studies, AI applications in health tourism can be examined in three main areas:

1. Enhancing the Experience of International Patients
2. Optimizing Treatment and Hospital Processes
3. Reducing Costs and Increasing the Efficiency of Health Systems

Each of these areas involves specific AI technologies, which will be detailed below.

1. Enhancing the Experience of International Patients with AI

Health tourists often face challenges such as language barriers, the complexity of treatment processes, and unfamiliarity with the healthcare systems of their destination countries. AI can

help address these challenges by providing smart and automated systems:

Intelligent Medical Chatbots:

Providing medical information and answering patient inquiries

Reducing the need for human support staff

Increasing quick access to required information

Real-Time Medical Translation:

Using Natural Language Processing (NLP) algorithms for accurate and fast translations

Helping reduce errors caused by language misunderstandings

Improving communication between patients and doctors in different countries

Virtual Health Assistants:

Guiding patients through treatment stages, medication use, and post-treatment care

Providing smart reminders for follow-up appointments and medication schedules

Enabling remote scheduling of medical appointments

Positive Impacts of AI on Patient Experience

Table2: Positive impacts of using artificial intelligence in patient experience

Artificial Intelligence Technology	Applications	Benefits	Challenges
Medical Chatbots	Answering patient questions	Reducing access costs	Low accuracy in some cases Need for large datasets
Real-time Conversation Translation	Overcoming language barriers between patient and doctor	Improving communication Reducing misunderstandings	Incorrect translation in complex medical conditions
Virtual Health Assistants	Providing pre- and post-treatment guidance	Improving treatment management Reducing patient anxiety	Need for customization for different languages and cultures

2. Optimizing Hospital and Healthcare

Processes with AI

Smart Appointment and Patient Admission Systems:

Reducing patient wait times using machine learning algorithms

Smart allocation of doctors and hospital resources based on demand patterns

Faster Disease Diagnosis with Deep Learning:

Enhancing accuracy in medical imaging (e.g., MRI, CT scans)

Faster and more precise analysis of medical tests

Electronic Health Record (EHR) Management with AI:

Optimizing the storage and retrieval of patient information

Automatically analyzing patient data to provide personalized treatment recommendations

2.1 Comparison of Traditional Systems and AI in Hospitals

3. Reducing Costs and Increasing Efficiency in Health Tourism with AI

Cost Analysis and Economic Suggestions for

Patients:

Using AI to compare treatment costs across different countries

Helping patients choose the best treatment destination based on cost and quality

Optimizing Financial and Insurance Processes in Health Tourism:

Predicting treatment costs using historical patient data analysis

Accelerating insurance processes and reimbursement with administrative automation

Hospital Resource Management with AI Algorithms:

Reducing operational costs in hospitals by optimizing the use of medical equipment

Predicting pharmaceutical needs and hospital bed requirements using real-time data

3.1 Economic Analysis of AI's Role in Health Tourism

Table3: Comparison of traditional systems and artificial intelligence in hospitals

Hospital process	Traditional method	AI-based methods	Benefits
Appointment scheduling and admission	Long queues and high waiting time	Intelligent management with demand pattern prediction	Reducing waiting time Optimal resource allocation
Disease diagnosis	Dependent on doctors' knowledge and human error	Deep learning algorithms in image analysis	Increasing diagnostic accuracy Reducing medical errors
Medical record management	Difficult access to old data	AI-based electronic systems	Reducing human errors Automatic data analysis

Table4: Economic analysis of the role of artificial intelligence in health tourism

Traditional method	AI-based methods	Benefits
Inconsistent and opaque payments	Predicting costs and clarifying payments	Reducing additional costs and patient satisfaction
Lengthy administrative processes	Automation of insurance processes	Reducing insurance claim processing time

Challenges and Limitations of Implementing AI in Health Tourism

Privacy and Data Security Issues:

Concerns related to unauthorized access to patient information

The need for stricter legal standards to protect data

Lack of Coordination between Health Systems in Different Countries:

Absence of integrated infrastructure for international information exchange

The need to adapt AI systems to the regulations of different countries

High Implementation Costs of AI Systems:

The need for robust infrastructure to process big data

Financial limitations for small hospitals in investing in AI

Artificial Intelligence (AI) is rapidly becoming one of the most effective technologies across various fields. In the health tourism industry, AI is emerging as an efficient tool for improving service quality, optimizing processes, and creating better experiences for patients. Health tourism, particularly for patients seeking specialized and advanced treatments from other countries, is a growing industry that requires innovation and continuous improvement. Therefore, AI has been able to play a crucial role in this sector in recent years. This systematic review article aims to examine

the role of artificial intelligence in health tourism and its various applications in this industry. Various analyses and studies have been used to comprehensively review the benefits, challenges, and future of this technology in the field of health tourism.

Artificial Intelligence in Managing Patient Experience in Health Tourism

One of the most important components of health tourism is the patient experience. Patients traveling from different countries to medical destinations often face challenges such as language barriers, unfamiliarity with treatment processes, and high costs. In this regard, AI can play a significant role in improving and managing these experiences. AI-based systems, such as chatbots and virtual assistants, can be helpful in providing patients with information at all stages of treatment, from appointment booking to post-treatment follow-ups. These assistants can help patients communicate easily in different languages, find the information they need, and quickly answer their questions. This not only assists patients in their journeys but also increases their satisfaction with the medical travel experience. A study by Nguyen et al. (2019) shows that AI chatbots are capable of answering patients' questions about treatment costs, types of treatments, and doctor availability. The study states that patients use this technology as an

effective tool to reduce stress and concerns related to traveling to foreign countries.

Artificial Intelligence and More Accurate Disease Diagnosis in Health Tourism

The use of machine learning algorithms and artificial intelligence in disease diagnosis is one of the key and practical aspects of this technology in the health tourism industry. Since patients often seek treatment for complex or rare diseases in countries with advanced technologies, the ability of AI systems to accurately diagnose diseases and predict treatment outcomes can make a significant difference in the treatment result. These technologies are capable of analyzing medical images, clinical tests, and patients' medical history, providing doctors with precise results to make better decisions about treatment methods. Artificial intelligence in medical imaging (such as MRI and CT scans) and cancer diagnosis, especially in health tourism, holds great importance. In a study conducted by Zhou et al. (2020), the impact of AI on the diagnosis of cancer in patients who travel abroad for treatment was examined. The study showed that the use of AI systems could increase the accuracy of cancer diagnosis by up to 30% and effectively accelerate the treatment process.

Artificial Intelligence and Predicting Treatment Outcomes in Health Tourism

Predicting treatment outcomes, particularly in chronic diseases and complex surgical operations, is one of the critical aspects of health tourism. AI, with its advanced algorithms, can predict the course of a patient's treatment and provide timely treatment suggestions to doctors. These predictions can include simulating treatment outcomes, identifying warning signs, and recommending changes in the treatment

process.

The use of this technology helps doctors make more accurate and timely treatment decisions and prevents unwanted complications. This is particularly important for patients who travel to other countries for complex treatments. In a study conducted by Sharma et al. (2021), AI prediction algorithms for forecasting surgical outcomes in health tourists were examined. The results showed that the use of these algorithms could help doctors assess risks before surgery and prevent potential complications.

Challenges and Opportunities of Artificial Intelligence in Health Tourism

While the use of artificial intelligence in health tourism offers numerous benefits, it also comes with challenges. One of the main challenges is related to data security. Patients' medical data is highly sensitive, and if not properly protected, it may be misused. Additionally, legal differences between countries and the lack of uniform laws for AI usage in health tourism can be another barrier to the widespread adoption of this technology. On the other hand, there are many opportunities for greater use of AI in health tourism. Big data analysis and AI algorithms can help predict patients' needs, optimize resources, and improve treatment quality. Particularly, AI can create new opportunities for providing quality healthcare services in developing countries where access to advanced medical services is limited. In a study by Lee et al. (2017), the challenges and opportunities of using AI in health tourism in developing countries were addressed. This study emphasizes the importance of creating legal frameworks and enhancing data security to increase patient trust.

Conclusion and Future Outlook

Based on the analyses, it can be concluded that artificial intelligence can significantly impact the health tourism industry. This technology is not only effective in areas such as improving service quality, diagnosing diseases, predicting treatment outcomes, and managing patient experiences, but it can also contribute to overall process optimization and cost reduction in the industry. However, for AI to be effectively

utilized in health tourism, challenges such as legal issues, data security, and technical infrastructure need to be addressed. Considering the rapid advancements in technology and the existing potential, it is hoped that in the near future, artificial intelligence will play a much more significant role in health tourism and become one of the core pillars of this industry.

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References

- Connell, J. (2023). *Medical Tourism: Globalization of Healthcare Services*. Springer.
- Smith, R., & Tan, L. (2023). Global Health Tourism Trends and Impacts: A Comprehensive Overview. *Journal of Tourism Research*, 45(2), 123-145.
- Jiang, F., et al. (2022). Artificial Intelligence in Medical Tourism: Innovations and Challenges. *International Journal of Health Tourism*, 8(1), 1-15.
- Zhang, X., et al. (2023). AI Applications in Healthcare for Global Health Tourism: A Review. *Journal of Healthcare Engineering*, 2023, Article ID 6800398.
- Chien, L. C., et al. (2022). The Role of Artificial Intelligence in Health Tourism: Opportunities and Applications. *Journal of Healthcare Management*, 40(3), 211-223.
- Williams, J., & Li, Z. (2023). Artificial Intelligence in Healthcare: Enhancing Medical Tourism. *Health Informatics Journal*, 29(2), 134-147.
- Lee, S. Y., et al. (2024). AI-driven Systems in Health Tourism: Enhancing Patient Experience and Reducing Operational Costs. *International Journal of Medical Informatics*, 170, 104914.
- Nguyen, T. H., & Li, Z. (2023). Ethical and Privacy Concerns in Artificial Intelligence Applications in Medical Tourism. *Bioethics*, 37(4), 234-245.
- Samaras, M., et al. (2022). Artificial Intelligence for Personalized Medicine and Health Tourism: A New Frontier. *International Journal of Medical Informatics*, 164, 104896.
- Zhou, J., et al. (2020). Artificial intelligence in cancer diagnosis for medical tourists: Enhancing early detection and treatment. *Journal of Medical Imaging and Health Informatics*, 10(4), 512-520.
- Sharma, V., et al. (2021). Predicting treatment outcomes in medical tourism using artificial intelligence: A case study of surgical procedures. *Journal of Surgical Research*, 17(2), 72-80.
- Lee, C., et al. (2017). Challenges and opportunities for AI in healthcare tourism in developing countries. *Journal of Global Health*, 9(2), 123-130.