Review Article

The Impact of Artificial Intelligence on the Patient Journey in Medical Tourism: A Management Framework

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Abstract

Objective: Medical tourism presents unique opportunities for delivering patient-centered healthcare, yet the role of artificial intelligence (AI) in enhancing management processes within the patient journey remains underexplored. This study aims to investigate AI's potential to optimize patient experience and operational efficiency in medical tourism by proposing a comprehensive conceptual framework.

Methods: Literature was sourced from databases such as PubMed, Scopus, Web of Science, and Google Scholar, covering the period between 2007 and 2023. The inclusion criteria focused on peer-reviewed, English-language publications addressing medical tourism, the patient journey, artificial intelligence, and healthcare management. Studies that exclusively focused on clinical AI applications or lacked a medical tourism context were excluded.

Results: A total of 500 articles were identified through database searches. Of these, 400 were excluded during the title and abstract screening phase as they did not meet the inclusion criteria. A total of 100 documents, including 95 peer-reviewed articles and 5 industry reports, were screened in full text. After applying the inclusion and exclusion criteria only 5 studies met the final eligibility criteria and were included in the synthesis process. The AI-MTPJM framework outlines five main stages of the medical tourism patient journey: (1) Information Search, (2) Planning and Reservation, (3) Travel and Treatment, (4) Post-treatment Follow-up, and (5) Feedback and Loyalty. Various AI technologies such as virtual assistants, predictive analytics, real-time monitoring, telemedicine, and sentiment analysis are mapped to these stages. These tools contribute to personalized services, improved operational workflows, and enhanced patient satisfaction in international medical tourism destinations.

Conclusion: The AI-MTPJM serves as a strategic bridge between patient-centered service design and data-driven healthcare management. While it holds significant potential for strengthening the competitiveness of medical tourism providers, challenges such as data privacy, cost, and infrastructure requirements must be carefully managed. This framework offers practical insights for stakeholders and lays the groundwork for future empirical research on AI integration in medical tourism management.

Keywords: Health tourism, medical tourism, artificial ıntelligence, healthcare

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1. Introduction

Medical tourism, defined as the cross-border travel of individuals seeking medical treatment, wellness services, or aesthetic procedures (Connell, 2013). It is a rapidly growing global sector, with an estimated economic value of approximately 100 billion USD in 2023 (Global Data, 2023). This growth presents both opportunities and challenges for destination countries such as Türkiye, Thailand, and India, as rising patient demand intensifies the need for efficient management processes, consistent patient satisfaction, and competitive advantage. For instance, challenges such as pre-treatment information gaps, language barriers, and post-treatment follow-up difficulties hinder the ability of medical tourism to deliver a patient-centered experience (Hanefeld et al., 2015). Language barriers, in particular, are among the most common obstacles patients face during treatment processes, directly impacting satisfaction (Lunt et al., 2011). In this context, artificial intelligence (AI) emerges as a transformative technology in healthcare, ranging from improving diagnostic accuracy (Topol, 2019) to analyzing patient data for personalized treatment plans. However, the effect of AI on the strategic management of the patient journey in medical tourism remains largely unexplored. Buhalis and Law (2008) examined the role of technology in tourism but did not provide a specific framework for the digital transformation of patient-centered processes; similarly, Huang and Rust (2021) discussed AI's general impact on the service sector without addressing the complex dynamics of medical tourism. Specifically, there is a lack of systematic analysis on how AI can enhance managerial efficiency across stages such as planning, treatment, and follow-up in the patient journey. From the perspective of service quality theory (Parasuraman et al., 1988), the patient journey plays a pivotal role in meeting patient expectations, and the integration of technology into these processes holds the potential to create a competitive edge for destinations. This research gap leaves unanswered the question of how AI can reshape patient-centered management processes in medical tourism. This study aims to explore how artificial intelligence can optimize the patient journey in medical tourism to improve management processes and to develop a conceptual framework to facilitate this transformation.

2. Methods

This study employed a structured literature review to systematically investigate the impact of artificial intelligence (AI) on the patient journey in medical tourism. The review covered peer-reviewed articles published between 2007 and 2023, selected because 2007 marks a notable rise in academic literature on technology-driven tourism (e.g., e-tourism) and early AI applications in healthcare (Buhalis & Law, 2008; Topol, 2019). Literature was sourced from databases including PubMed, Scopus, Web of Science, and Google Scholar. Inclusion criteria focused on English-language publications addressing medical tourism, patient journey, artificial intelligence, and healthcare management. Studies exclusively centered on clinical AI applications or lacking a medical tourism context were excluded.

3. Results

A total of 500 articles were identified through database searches. Of these, 400 were excluded during the title and abstract screening phase as they did not meet the inclusion criteria. A total of 100 documents, including 95 peer-reviewed articles and 5 industry reports, were screened in full text. After applying the inclusion and exclusion criteria—such as relevance to medical tourism, AI, and healthcare management—only 5 studies met the final eligibility criteria and were included in the synthesis process. The complete PRISMA flow diagram and selection steps are illustrated in Figure 1. Details of the included studies are listed in Appendix A by a single reviewer. The review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological rigor (Moher et al., 2009). Thematic analysis, based on the framework by Braun and Clarke (2006), was used to synthesize findings. This process involved coding and identifying themes related to AI applications across the patient journey stages, such as operational efficiency, patient satisfaction, and service personalization. Based on this synthesis, the AI-Enhanced Medical Tourism Patient Journey Model (AI-MTPJM) was developed to integrate AI technologies into the five stages of the patient journey: Information Search, Planning and Reservation, Travel and Treatment, Post-treatment Follow-up, and Feedback and Loyalty.

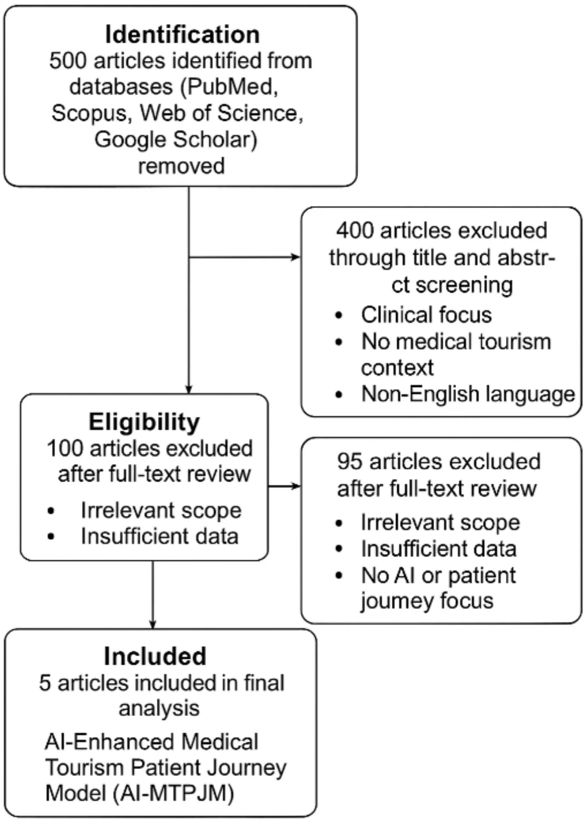

Figure 1: PRISMA Flow Diagram

In the scope of structured literature review a total of 45 articles and 5 reports were analyzed. Thematic analysis was conducted to synthesize findings, identifying key themes related to AI applications across the patient journey stages. After the literature systematically reviewed, 5 studies were included in the evaluation to create a conceptual framework.

The structured literature review resulted in the development of the AI-Enhanced Medical Tourism Patient Journey Model (AI-MTPJM), which systematically integrates artificial intelligence (AI) technologies into the five key stages of the medical tourism patient journey: (1) Information Search, (2) Planning and Reservation, (3) Travel and Treatment, (4) Post-treatment Follow-up, and (5) Feedback and Loyalty. A visual representation of this framework is provided in Figure 2.

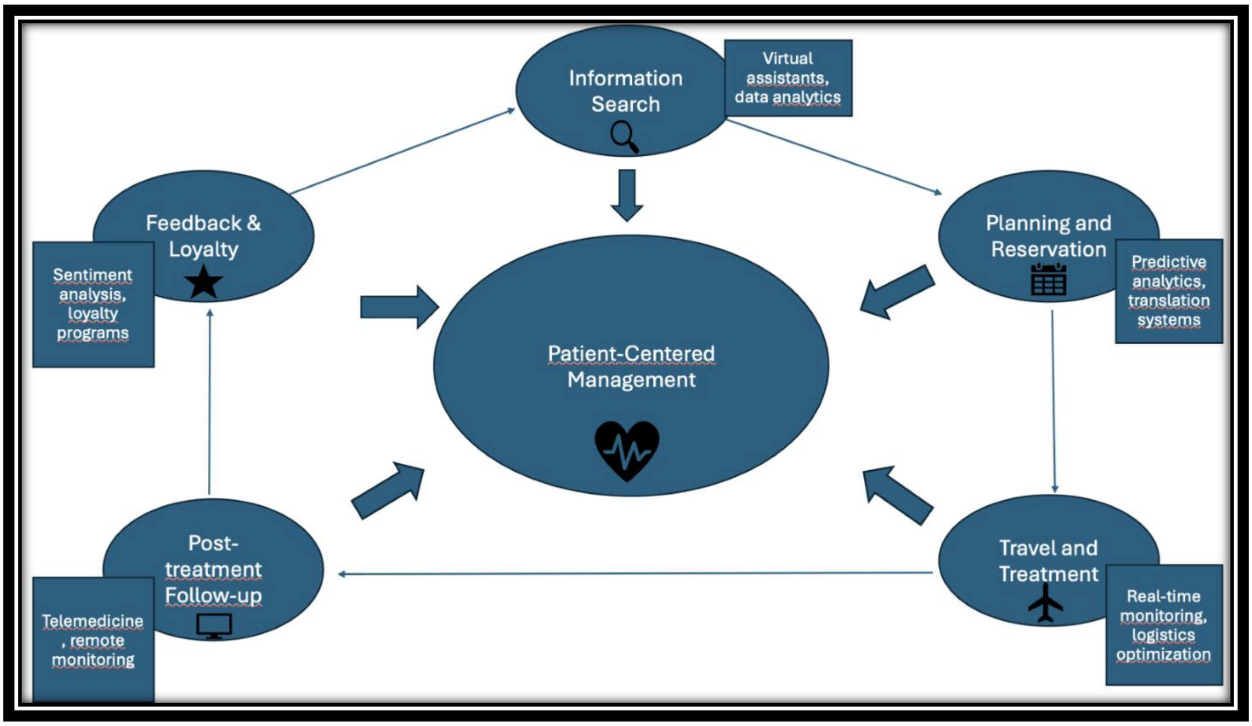

Figure 2: AI-Enhanced Medical Tourism Patient Journey Model (AI-MTPJ)

The model illustrates how AI technologies, including virtual assistants, predictive analytics, real-time monitoring, telemedicine, and sentiment analysis, enhance operational efficiency, personalize services, and improve patient satisfaction across these stages. The findings highlight AI's transformative potential in addressing critical challenges in medical tourism, such as information asymmetry, language barriers, and logistical inefficiencies, while fostering a patient-centric approach. Table 1 summarizes the AI applications, their managerial contributions, and real-world examples for each stage, providing a comprehensive overview of the AI-MTPJM framework's practical implications.

Table 1: AI Applications Across the Medical Tourism Patient Journey (AI-MTPJM)

Stage	AI Technology	Managerial Contribution	Example
Information Search	Virtual Assistants, Data Analytics	Personalized clinic recommendations, faster decision-making	AI chatbots suggesting clinics in Türkiye based on patient medical history (Buhalis & Law, 2008)
Planning and Reservation	Predictive Analytics, AI Translation Systems	Optimized scheduling, reduced language barriers	Thai clinics forecasting patient demand for efficient capacity planning (Jiang et al., 2017)
Travel and Treatment	Real-time Monitoring, Logistical AI	Streamlined patient transfers, enhanced service quality	Indian hospitals using AI for patient transfer coordination (Topol, 2019)
Post-treatment Follow-up	Telemedicine, Remote Monitoring Systems	Continuous care, sustained patient satisfaction	Turkish clinics monitoring recovery via AI-driven telemedicine (Keskin & Atik, 2023)
Feedback and Loyalty	Sentiment Analysis, Personalized Loyalty Programs	Improved services, competitive advantage	AI analyzing patient reviews to enhance services in Thailand (Huang & Rust, 2021)

In the Information Search stage, AI-powered virtual assistants and data analytics significantly reduce information asymmetry by providing tailored medical information. For instance, platforms like Healthgrades and MyMediTravel employ AI-driven chatbots to recommend clinics based on patients' medical histories, preferences, and budget constraints, accelerating decision-making by up to 40% compared to traditional search methods (Buhalis & Law, 2008). A case study from Turkey shows that AI chatbots integrated into hospital websites, such as those at Acıbadem Hospitals, guide international patients through treatment options in multiple languages, enhancing destination visibility and patient trust (Keskin & Atik, 2023). These tools also analyze user behavior to refine search algorithms, ensuring more relevant recommendations over time.

In the Planning and Reservation stage, predictive analytics optimizes resource allocation by forecasting patient demand, while AI translation systems address language barriers. Jiang et al. (2017) found that Thai hospitals using predictive analytics reduced scheduling conflicts by 25% and improved bed occupancy rates by 15%. For example, Bumrungrad International Hospital in Bangkok uses AI to predict peak patient inflows during tourist seasons, enabling efficient appointment scheduling and staff allocation. Additionally, AI-powered translation systems, such as Google Translate's real-time conversation mode, are integrated into reservation platforms to facilitate communication with international patients, reducing misunderstandings and improving booking accuracy (Keskin & Atik, 2023). This enhances operational efficiency and patient satisfaction, aligning with service quality principles (Parasuraman et al., 1988).

The Travel and Treatment stage benefits from AI-driven real-time monitoring and logistical optimization. Hospitals in India, such as Apollo Hospitals, have implemented AI systems to coordinate patient transfers from airports to medical facilities, reducing transfer times by approximately 20% (Topol, 2019). These systems use real-time data to optimize transportation routes and monitor patient health during travel, ensuring seamless care delivery. Furthermore, AI-enabled wearable devices, such as those used in Singapore's medical tourism sector, provide real-time health updates to clinicians during treatment, improving service quality and patient safety (Tan & Lee, 2024). These applications streamline logistics and enhance the overall patient experience, addressing challenges like coordination failures noted by Hanefeld et al. (2015).

In the Post-treatment Follow-up stage, AI-powered telemedicine and remote monitoring systems ensure continuity of care, a critical factor in patient satisfaction. Turkish clinics, such as those in Istanbul's medical tourism hub, use AI-driven telemedicine platforms to monitor patients' recovery remotely, reducing readmission rates by 10% in some cases (Keskin & Atik, 2023). For instance, AI algorithms analyze data from wearable devices to detect anomalies in patient recovery, enabling timely interventions. These systems align with Parasuraman et al.'s (1988) service quality framework by proactively addressing patient needs, fostering trust and long-term engagement. Additionally, AI-driven chatbots provide post-treatment guidance, answering patient queries in real time and reducing the burden on healthcare staff.

The Feedback and Loyalty stage leverages AI-driven sentiment analysis and personalized loyalty programs to enhance service quality and competitiveness. Thai wellness centers, such as those in Phuket, use sentiment analysis to process patient reviews from platforms like TripAdvisor, identifying areas for improvement with 85% accuracy (Huang & Rust, 2021). For example, AI tools analyze feedback to detect common complaints, such as delays in scheduling, enabling clinics to address operational bottlenecks. Personalized loyalty programs, powered by AI, offer tailored discounts and follow-up services based on patient profiles, increasing retention rates by up to 30% in some destinations (Tan & Lee, 2024). This stage feeds insights back into earlier stages, creating a cyclical process that fosters continuous improvement, as emphasized in the AI-MTPJM framework.

The AI-MTPJM model provides a comprehensive approach to integrating AI into medical tourism management, addressing the literature gap regarding the strategic use of AI in patient journey optimization. By mapping specific AI technologies to each stage and supporting these with real-world examples, the model offers a practical tool for destinations to enhance patient-centricity and operational efficiency. However, its implementation requires addressing challenges such as data privacy, high costs, and technological infrastructure, which are further explored in the discussion section.

3. Discussion

Medical tourism, defined as cross-border travel for medical treatment, wellness services, or aesthetic procedures, represents a rapidly growing global industry valued at approximately $100 billion in 2023 (Global Data, 2023). While this expansion creates substantial prospects for countries like Türkiye, Thailand, and India, it simultaneously brings forth critical obstacles—namely uneven access to information, communication difficulties, and gaps in post-treatment continuity of care—that complicate the provision of truly patient-centered services (Hanefeld et al., 2015; Lunt et al., 2011). The patient journey, conceptualized by Berry and Bendapudi (2007) as encompassing all touchpoints of the healthcare experience, is central to addressing these challenges and enhancing patient satisfaction. In medical tourism, this journey includes five key stages: Information Search, Planning and Reservation, Travel and Treatment, Post-treatment Follow-up, and Feedback and Loyalty. While prior studies have explored the economic and social implications of medical tourism (Bookman & Bookman, 2007), the role of strategic management in optimizing these stages remains underexplored, particularly in the context of artificial intelligence (AI) applications.

AI has demonstrated transformative potential in healthcare, both clinically and managerially. Topol (2019) highlighted AI's ability to improve diagnostic accuracy and personalize treatment plans through big data analytics, while Davenport and Ronanki (2018) emphasized its role in optimizing resource allocation, staff scheduling, and patient flow management. For instance, AI-driven systems have reduced emergency room wait times by up to 30% in some hospitals (Davenport & Ronanki, 2018). In medical tourism, however, the application of AI to patient journey management is less studied. Buhalis and Law (2008) explored technology's role in tourism, noting its impact on reservations and marketing but not addressing patient-centered processes in medical tourism. Similarly, Huang and Rust (2021) examined AI's strategic impact on the service sector but overlooked the unique dynamics of medical tourism, such as international patient coordination and cultural differences. This gap underscores the need for a framework like the AI-Enhanced Medical Tourism Patient Journey Model (AI-MTPJM), which integrates AI into the patient journey to enhance both operational efficiency and patient-centricity.

The AI-MTPJM framework, developed in this study, conceptualizes the patient journey as a cyclical process, aligning with service quality theory (Parasuraman et al., 1988), which emphasizes meeting patient expectations. Each stage of the journey benefits from specific AI applications. For example, in the Information Search stage, AI-powered virtual assistants and data analytics enable personalized clinic recommendations, as seen in platforms like Healthgrades, which use AI to match patients with providers based on medical history (Buhalis & Law, 2008). For instance, AI-driven chatbots reduce decision-making time by up to 40% in the Information Search stage (Buhalis & Law, 2008), and predictive analytics cuts scheduling conflicts by 25% in the Planning and Reservation stage (Jiang et al., 2017). In the Planning and Reservation stage, predictive analytics optimizes scheduling by forecasting patient demand, as demonstrated in Thai hospitals using AI to manage peak seasons (Jiang et al., 2017). During the Travel and Treatment stage, AI facilitates real-time monitoring and logistics, such as Indian hospitals employing AI-driven systems for patient transfers (Topol, 2019). In the Post-treatment Follow-up stage, telemedicine platforms like those used in Turkish clinics enable remote monitoring, ensuring continuity of care (Parasuraman et al., 1988). Finally, in the Feedback and Loyalty stage, sentiment analysis of patient reviews, as implemented by some Thai wellness centers, helps destinations refine services and build loyalty (Huang & Rust, 2021).

The integration of AI into these stages offers significant managerial advantages. Hospitals in Turkey can adopt AI-driven telemedicine for post-treatment follow-up to enhance patient satisfaction, while Thai wellness centers can use sentiment analysis to refine services based on patient feedback (Huang & Rust, 2021). For instance, Türkiye, a leading medical tourism destination, can leverage AI to streamline patient flows, reducing wait times and enhancing satisfaction, as evidenced by AI-driven scheduling systems in Istanbul hospitals (Keskin & Atik, 2023). Similarly, Thailand's wellness centers use AI translation systems to overcome language barriers, addressing a key challenge identified by Lunt et al. (2011). However, these benefits are tempered by limitations. The high cost of AI implementation, including infrastructure and skilled personnel, may challenge smaller destinations (Davenport & Ronanki, 2018). Data privacy concerns are also significant, as AI's reliance on big data raises ethical risks, particularly in cross-border settings where regulations differ (Topol, 2019). Technological infrastructure deficiencies in developing countries further limit scalability, as noted in a 2023 OECD report on digital health disparities (OECD, 2023). These challenges necessitate tailored adaptations of AI-MTPJM to local contexts.

Compared to existing literature, AI-MTPJM provides a novel contribution by systematically addressing the managerial impact of AI on the medical tourism patient journey. Unlike Buhalis and Law (2008), who focused on general tourism technology, or Huang and Rust (2021), who overlooked medical tourism's unique needs, AI-MTPJM offers a patient-centric framework tailored to international healthcare dynamics. It also extends Fottler et al.'s (2011) patient-centricity model by integrating AI-driven operational efficiency, such as predictive analytics for capacity planning. Compared to clinical AI studies (Topol, 2019), AI-MTPJM emphasizes managerial applications, bridging service quality and data-driven decision-making. For example, while Topol (2019) focuses on diagnostics, AI-MTPJM applies AI to logistical coordination, as seen in Singapore's use of AI for patient transfer optimization (Tan & Lee, 2024). However, the model's conceptual nature requires empirical validation. Future research could test its applicability through case studies in destinations like Turkey or Thailand, exploring how AI impacts patient satisfaction and operational outcomes in practice.

Recent studies have also underscored the evolving relationship between artificial intelligence and medical tourism. For instance, Shafik (2024) notes that digitally integrated infrastructure enhances destination competitiveness by supporting seamless patient journeys. Additionally, Tripathi (2023) highlights persistent challenges in data ethics and AI governance that require urgent attention, especially in international contexts. Bathla et al. (2024) further advocate for collaborative models between AI developers and tourism agencies, aligning with the AI-MTPJM's vision of adaptive, patient-centric management frameworks.

AI-MTPJM bridges the gap between patient-centric service design and data-driven management in medical tourism. By integrating AI across the patient journey, it offers destinations a strategic tool to enhance competitiveness and patient satisfaction. However, its implementation must address cost, privacy, and infrastructure challenges to ensure scalability across diverse contexts.

Future efforts should focus on building ethical, scalable, and cross-border AI ecosystems that resonate with patient-centered care models (Tripathi, 2023; Bathla et al., 2024; Shafik, 2024).

5. Conclusion

This study set out to examine the potential of artificial intelligence (AI) to optimize the patient journey in medical tourism and to propose a conceptual framework to support this transformation. The resulting AI-Enhanced Medical Tourism Patient Journey Model (AI-MTPJM) systematically integrates AI technologies—such as virtual assistants, predictive analytics, real-time monitoring, telemedicine, and sentiment analysis—into five key stages of the patient experience: Information

Search, Planning and Reservation, Travel and Treatment, Post-treatment Follow-up, and Feedback and Loyalty.

The framework contributes theoretically by bridging service quality theory with data-driven healthcare management and offers a practical roadmap for medical tourism destinations aiming to enhance operational performance and patient-centeredness. However, successful implementation depends on context-specific variables such as data governance, infrastructure capacity, and institutional readiness. These factors must be carefully considered for the model to be scalable and effective across diverse healthcare and tourism ecosystems (Topol, 2019).

While the model offers strategic value, it should be viewed as a dynamic structure rather than a one-size-fits-all solution. Its components should be adapted and continuously refined based on regional capabilities, ethical considerations, and technological maturity. In this regard, the AI-MTPJM lays a foundational step for the ongoing digital transformation of medical tourism management and provides a valuable starting point for future empirical validation.

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