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The Role of AI in the Indian Medical Tourism Sector and its Implications for Global Health Goals: A Narrative Review

Chanchreek Sharma[1*], Muskan Saxena[1]
[1]*Assistant Professor, Institute of Hotel Management, Guru Kashi University, Bathinda, India*

***Abstract*: This narrative review analyses the transformative impact of artificial intelligence (AI) on the Indian medical tourism sector and its implications for UN SDG 3 (Good Health and Well-Being). It Synthesizes studies from various disciplines between 2010–2025, examining the AI applications across the patient lifecycle – from pre-travel recommendations and demand forecasting to the post-treatment remote monitoring and feedback, emphasizing how AI enhances the patient experience, optimizes operations, and promotes healthcare equity while reducing the cross-border health risks. It presents data privacy, algorithmic bias, digital divide, concerns of job displacement, ethical considerations, and flexible regulations as the key challenges to AI in Indian medical tourism. Conclusions recommend responsible governance, strategic planning, strict policy, employee reskilling, and multi-faced partnerships to nurture an all-inclusive, sustainable growth idolizing India as a global example for AI-enabled medical tourism.**

***Keywords*: Artificial Intelligence, Medical Tourism, India, Sustainable Development Goals, Digital Health.**

1. Introduction

Tourism, originating from an individual's voluntary environment change for business or personal reasons (Camilleri, 2017), over time has seen healthcare as a motive (Reed, 2008). Globalization provides a platform for accelerated cross-border healthcare services, stimulating medical tourism (Butler, 2015). India, with its rich medical resources caters diverse healthcare demands at lower costs (Ansari & Singh, 2024), though with globalization rise the risks of infection (Bathla et al., 2024; L. H. Chen & Wilson, 2013).

Automation aids in improving the varied healthcare services (Zuhair et al., 2024), optimizing pre-planning and communication during travel (Reed, 2008). The modern AI platforms outlay options for personalization, remote health monitoring, and customized recommendations while reducing the costs for cross-border healthcare and infection risks (Wong et al., 2024; Barua & Datta, 2024). Developing nations like India are preferred medical tourism destinations (S. Singh, 2016). AI improves patient forecasting, customer experience, and sustainability for an all-inclusive development (García-Madurga & Grilló-Méndez, 2023), regardless of the socio-economic and cultural disparities in India (Basumatary & Sarma, 2024). The urbanization has improved the present systems, with continuous innovations countering these barriers (Gunaseelan & Kesavan, 2020).

This review dwells into the role of AI in Indian medical tourism, the challenges, opportunities, future incorporation strategies and its implications for global health goals, prioritizing the need for national and international collaborations between healthcare and tourism organizations to enhance patient experience and maximize revenue.

2. Background Study

A. Tourism

Tourism is the temporary relocation of a person to places of historical, cultural, or economic significance, ranging more than a day and less than an year (Kostiainen, 2023). Deeply rooted in the history with ancient trade being the primary purpose of tourism, it has developed manifolds, also attracting academic focus (A. Christou, 2022; Butler, 2015; Jamal & Robinson, 2009). It contributes to 4–5% of the global GDP, with constant innovative approaches and sustainable practices (Agarwal et al., 2024; A. Kumar et al., 2025; Huang, 2025).

In India, the tourism sector pioneers economic growth and employment following the investments and multiplier effects strategy (D. Mishra et al., 2023; Gurunathan & Lakshmi, 2024; D. Singh & Alam, 2024). Since the advent of 21st century ecotourism, medical/wellness, religious, and adventure have been the focus for tourism studies (M & R, 2024; Borthakur & Kondasani, 2025). Its economic value is challenged by sustainability, lack of infrastructure, and heritage preservation, which is being worked upon by incorporating sustainable practices, strict and focused regulatory support, and efficient allocation of the resources (López-Naranjo et al., 2025; Forkpa et al., 2023; Asthana et al., 2023).

B. Artificial Intelligence

Artificial Intelligence (AI), was invented in the 1950s, to enable machine intelligence (Zuhair et al., 2024; Sousa et al., 2024; Collins et al., 2021). Facing early resistance termed as "AI winters," it has become efficient and gained effectiveness across varied domains owing to the continuous improvements

*Corresponding author: chanchreek21@gmail.com

(A. Mishra, 2024; Thatikonda & Golla, 2024). Multidisciplinary in nature AI studies access the opportunities and challenges for its implementations (Hall & Cooper, 2025; Rolnik, 2024; Madanchian & Taherdoost, 2025).

In India, AI supports digital transformation, promotes sustainability, reduces costs, and enhance productivity (Behera et al., 2025; Schwalbe & Wahl, 2020). It encourages green financing, task optimization, strategic decision making, and effective resource allocation through machine learning algorithms (Dyduch & Brzozowska, 2025; Naveen et al., 2025; C & Basavaraj, 2025).

C. Healthcare Systems

Healthcare systems is an umbrella term comprising of the organizations and professionals providing wellness and medical services (S. Mishra & Jain, 2025; McCoy & Allotey, 2021). Globally, healthcare disparities persists due to the socio-economic and cultural differences, requiring innovative solutions (Groenewegen et al., 2025; Wei et al., 2025). Health information systems (HIS) is one of the many innovative automated solutions digitizing the healthcare processes (Epizitone et al., 2023), but its costly nature limit the access for low-income groups (Pati et al., 2025). Globalization has enabled affordable and quality healthcare in developing nations (Gola et al., 2024; Ansari & Singh, 2024).

Innovations improving the access and equity in healthcare services are currently being focused in the academic domain (Aljahdali, 2024; Becker & Prætorius, 2025; Jawaid et al., 2025). In India's perspective, the enormous population size and lack of proper healthcare systems in rural areas hamper patient management, equal accessibility, resource allocation, and affordability (Hongal & IFS, 2023; Das & Guha, 2024). Ow insurance claims and gender bias still persist challenging equal healthcare to all despite long won independence (Agarwal et al., 2024; S. Singh et al., 2023; R. Kumar & Duggirala, 2021).

D. Medical Tourism

Medical tourism is a broad term combining travel for healthcare services with leisure, encompassing diverse treatments and patient types (Reed, 2008; Tsekouropoulos et al., 2024). This sector of tourism is resisted by the quality of services, ethical concerns, risks of infections and pandemics, and economic competition (L. H. Chen & Wilson, 2013; Jorshary et al., 2025; Klímová & Kuča, 2020; Çapar & Arslanoğlu, 2025; Maltezou & Pavli, 2024; Behrmann & Smith, 2010; Kemppainen et al., 2021). Emphasizing development of sustainable infrastructure and targeted marketing to overcome these resistances (Shafik, 2025; Reshadi & Chehragh, 2025).

Medical tourism requires integrated public health, socio-economic, and cultural approaches (Wong et al., 2024; Mo et al., 2025; Richards & Richards, 2006; Zhong et al., 2021). A strong revenue generator, it is accompanied with international and national trade benefits (Burns, 2015). The traditional healthcare systems of India (Yoga, Ayurveda) and low cost healthcare services are advantageous in positioning it as a favoured medical tourism destination, with 6.5% global market share (approximately $7.4 billion) by 2022 (Gunaseelan & Kesavan, 2020; S. Singh, 2016; Ansari & Singh, 2024; Amiri & Safariolyaei, 2017). Private healthcare sector dominates the Indian medical tourism landscape with 75% human resources, 68% hospitals, supporting the international and domestic medical demands (Nagar et al., 2021; U, 2019).

E. Global Health Goals and UN SDGs

Global health links to the health of people all round the globe, addressing the threats to well-being and preservation of humans, closely related to the17 sustainability development goals devised by United Nations targeting inclusive development by 2030 (México et al., 2018). Of these, SDG 3 focuses on good health and well-being (Cohen et al., 2022; Sorooshian, 2024). Its challenges span over the political, economic, infrastructural, and regulatory domains (Aftab et al., 2020; Kuriakose, 2020; Khorram-Manesh & Gray, 2025).

SDG 3 on health and wellness, interlinks with others (e.g., SDG 2) to overcome the reoccurring pandemics and climate impacts (Morton et al., 2017) (Gustafsson, 2023) (X. Chen et al., 2020). In India, National Health Policy 2017 aligns with SDGs, targeting mortality reduction, NCD control, and equity (Gera et al., 2018) (Lnu et al., 2025). Barriers include financing gaps, sectoral inequities, and corruption (Kalita et al., 2023) (United Nations Global Compact Network India, 2024). Domestic successes and aid position India as a contributor to global health (Shobhna & Shukla, 2025).

3. Methodology

This narrative review synthesizes literature on AI in Indian medical tourism and implications for global health goals.

Search Strategy: Comprehensive searches in Scopus, PubMed, ResearchGate, and MDPI used keywords: AI and Machine Learning, Medical Tourism, Global Health Goals, Healthcare systems, AI in Medical Tourism, Medical Tourism in India, SDGs and Medical Tourism (2010–2026, including earlier seminal works).

Eligibility Criteria: Included studies aligned with themes, demonstrated quality data, addressed relevant research questions, offered societal/policy contributions, and were in English.

Selection Process: Initial 262 studies → removed 42 duplicates → screened 220 → excluded 61 → analyzed 159 → removed 13 → final 115 papers selected thematically.

Data Synthesis and Analysis: Papers organized thematically (tourism evolution, AI fundamentals, AI in healthcare/tourism/medical tourism, global health goals alignment, challenges) rather than chronologically. Critical analysis identified implications, gaps, and future directions.

4. Discussions

Critical analysis of the 115 selected studies reveals AI's substantial potential to reshape India's medical tourism sector. With healthcare costs 60–80% lower than in developed nations, the sector was valued at USD 7.4 billion in 2022 and is projected to reach USD 13–16 billion by 2030 (Rinkesh & Mahida, 2024). AI acts as a catalyst for addressing emerging complexities and driving sustainable growth. The integrated

findings are presented below:

A. AI as a Catalyst for Personalization and Enhanced Patient Experience

AI positively influences the patient journey across five stages: search, planning, travel/treatment, follow-up, and feedback (Yousefi et al., 2022) (Karcioğlu, 2025). Tools such as recommendation engines, advanced search, and chatbots analyze medical history, affordability, and preferences to deliver tailored suggestions (Adeyemo et al., 2025) (S. Sharma et al., 2023).

In India, combining low-cost, high-quality services with AI personalization fosters repeat visits and positive referrals. Post-treatment, telemedicine and AI-enabled wearables support remote monitoring, reducing repeat travel and associated infection risks (L. H. Chen & Wilson, 2013).

Implications for Global Health Goals — Personalized services advance SDG 3 (Good Health and Well-Being) through preventive care, systematic data management, early diagnosis, and equitable access—especially for patients from low- and middle-income countries. This also supports SDG 10 (Reduced Inequalities) by broadening access to quality care and diminishing disparities.

B. Operational Efficiency and Resource Optimization

AI streamlines medical tourism operations through demand forecasting, appointment synchronization, inventory control, and revenue optimization. Algorithmic models predict tourist inflows using historical data, reviews, and economic indicators, enabling better resource planning during peak periods (Jalali et al., 2025) (Nagar et al., 2024). AI scheduling can reduce waiting times by 30–50%, while predictive analytics minimizes stock-outs and lowers package costs.

India's private sector dominates (68–75% of beds and manpower), where AI adoption is higher than in public facilities, driving revenue and sustainable practices (Sodhi et al., 2025) (Ansari & Singh, 2024). Recent trends show AI integration across the full patient lifecycle—from symptom assessment to follow-up—enhancing procedures and service delivery (Epizitone et al., 2023).

Implications for Global Health Goals — Resource optimization and waste reduction contribute to SDG 3 targets for effective health systems, SDG 9 (Industry, Innovation and Infrastructure) through scalable advancements, and SDG 12 (Responsible Consumption and Production) by systematizing resource use and minimizing wastage.

C. Strengthening India's Competitive Position in the Global Medical Tourism Landscape

India leverages low costs, high-quality care, and service diversity to maintain its status as a leading destination. AI strengthens these advantages by evaluating provider reputation, success rates in specialized areas (e.g., transplants, oncology, cardiology), and building patient trust through transparent metrics (Kaur et al., 2019) (Reshadi & Chehragh, 2025). Post-COVID emphasis on remote consultations has been reinforced by AI, increasing confidence in long-distance care.

Projections indicate growth from USD 12–13 billion to USD 22–25 billion between 2026–2031 at 12–14% CAGR, with AI innovations in diagnostics, telemedicine, and coordination as key drivers.

Implications for Global Health Goals — AI-enhanced affordability and quality support SDG 3 and SDG 10 by offering viable alternatives to high-cost, long-wait systems elsewhere. It also advances SDG 17 (Partnerships for the Goals) through collaborations such as Apollo-Microsoft initiatives.

D. Post-Pandemic Focus on Preventive and Predictive Care

COVID-19 shifted healthcare from reactive to proactive models, particularly for non-communicable diseases (NCDs) like cardiovascular conditions, which form a major segment of inbound medical tourists seeking affordable advanced care (Latief & Ulfa, 2024). AI facilitates early diagnosis, personalized prevention, and real-time monitoring, reducing advanced-stage risks and costs.

This preventive focus attracts patients from high-NCD-burden countries with limited predictive tools. Remote monitoring and follow-up improve outcomes and minimize post-travel complications. Indian providers increasingly integrate AI across patient lifecycles, positioning the country as a preventive care hub.

Implications for Global Health Goals — Emphasis on prevention and prediction supports SDG 3 by lowering premature NCD mortality, enabling early detection, and expanding health coverage through cost-effective innovations. Tools like AICVD position India as a model for low- and middle-income countries, bridging preventive care gaps and contributing to global NCD reduction efforts (SDG 3 and SDG 10).

E. Expansion Beyond Metro Cities and Tier-II & III Healthcare Growth

Historically concentrated in metros due to advanced infrastructure and international accreditation, medical tourism is now expanding to tier-2 and tier-3 cities. Improved connectivity, digital technologies, and private investments (USD 6–7 billion annually) drive this shift. Cities like Jaipur, Chandigarh, and Pune emerge as reliable hubs with quality care, shorter waits, and patient-centric environments at lower costs.

Role of AI and Digital Health — AI-powered diagnostics, telemedicine, remote monitoring, and electronic records enable personalized care without physical presence, reforming operations and reducing waits. Government initiatives (Ayushman Bharat Digital Mission, e-medical visas) accelerate rural/semi-urban growth.

Implications for Global Health Goals — Decentralization promotes SDG 3 by ensuring equitable access beyond urban areas and addressing urban-rural disparities. It supports SDG 10 by extending affordable care to international patients from underserved regions, SDG 9 through digital infrastructure advancements, and SDG 17 via public-private collaboration.

F. Alignment with UN Sustainable Development Goals (SDG 3 and beyond)

AI in medical tourism helps to minimise the wedge between sustainable and equitable healthcare and the community

(Figueiredo et al., 2024). AI in Indian medical tourism directly contributes to multiple SDGs:

- *SDG 3* — Early diagnosis, remote monitoring, error reduction, and preventive care at lower costs and shorter waits reduce NCD mortality and promote global health equity (Wei et al., 2025).
- *SDG 8* — Creates jobs in health-tech, data science, AI operations, and maintenance.
- *SDG 9* — Drives digitally robust infrastructure and innovation in medical tourism.
- *SDG 10* — Reduces disparities across communities, genders, and regions; narrows digital and cultural divides.
- *SDG 17* — Requires national/international public-private partnerships for scalable AI integration.

Implications for Global Health Goals — India's model of affordable, scalable, AI-enabled care offers a blueprint for low- and middle-income countries, advancing universal health coverage, reducing NCD mortality, enabling early risk detection, and fostering safe, healthy environments globally.

G. Key Challenges and Ethical Considerations

Despite benefits, AI integration faces critical challenges that hamper its full-scale implementation in the sector (Thayarnsin & Douglas, 2021). The limitations and mitigation strategies are:

H. Strategic Recommendations and Way Forward

To fully harness AI's transformative role in Indian medical tourism and ensure meaningful contributions to global health goals, a multi-stakeholder, coordinated approach is essential (Alegria Quintela et al., 2016) (Ferhataj & Memaj, 2024). The Table 1 detailed strategic recommendations emerge from the synthesized literature.

1) Development of Comprehensive Nationwide Policy Frameworks

Government bodies responsible for health, finance, human resource development, and tourism must collaborate to formulate unified, nationwide policies specifically addressing AI integration in medical tourism. These policies should explicitly tackle ethical concerns (bias, transparency, accountability), data governance standards, and regulatory gaps currently hindering scalable adoption. Emphasis must be placed on aligning national guidelines with international benchmarks such as the UN report on "Ethics & Governance of AI use for health" (Muralidharan et al., 2025) and WHO recommendations (WHO, 2024). Such frameworks would provide clarity for private providers, startups, and international collaborators, reducing uncertainty and accelerating responsible implementation across urban and tier-2/3 regions.

2) Prioritization of Digitally Enabled Infrastructure Expansion in Tier-2 and Tier-3 Cities

Public and private stakeholders should strategically invest in digitally robust medical tourism infrastructure beyond metropolitan areas. This includes high-speed internet, AI-compatible diagnostic tools, telemedicine platforms, electronic health record systems, and accredited facilities in emerging hubs (e.g., Jaipur, Chandigarh, Pune). Targeted investments—building on the reported USD 6–7 billion annual private capital inflows—would decentralize access, reduce urban overload, and make quality care geographically inclusive. Government initiatives like the Ayushman Bharat Digital Mission should be leveraged to create interoperable digital ecosystems that support remote consultations, real-time monitoring, and seamless patient data sharing, thereby enhancing visibility of non-metro destinations to international patients.

3) Implementation of Large-Scale Training and Reskilling Programs

To mitigate risks of job displacement in administrative, basic diagnostic, reception, and operational roles, comprehensive capacity-building and reskilling programs are urgently needed. These should target healthcare professionals, tourism staff, and support personnel, focusing on AI literacy, hybrid human-AI workflows, data interpretation, ethical oversight, and complementary skills (e.g., patient communication, cultural sensitivity). Positioning AI as an augmentative tool rather than a replacement—through continuous education modules, certification courses, and on-the-job training—would foster coexistence, maintain employment, and improve overall service quality. Such programs align with SDG 8 (Decent Work and Economic Growth) by creating new competency-based roles in health-tech, AI maintenance, data analytics, and strategic operations.

4) Fostering Robust Public-Private and International Partnerships

Scalable, equitable AI integration demands collaborative ecosystems involving hospitals, technology firms (e.g., Microsoft-Apollo type models), government agencies, academic institutions, and international organizations. These partnerships should focus on joint R&D for localized AI solutions, shared ethical guidelines, technology transfer to tier-2/3 regions, cross-border data standards, and co-funding mechanisms. International collaborations would also facilitate knowledge exchange, benchmark best practices, and position India as a responsible leader in AI-enabled medical tourism. Such alliances directly advance SDG 17 (Partnerships for the Goals) while accelerating innovation, infrastructure development (SDG 9), and reduced inequalities (SDG 10).

Table 1

Challenge	Reason	Strategy to Curb
Data Privacy & Security	Risk of misuse and breaches in cross-border healthcare	Stricter laws, consent frameworks, end-to-end encryption
Algorithmic Bias	Potential for wrongful diagnosis due to biased datasets	Regular audits, continuous innovation for unbiased recommendations
Digital Divide	Knowledge and access gaps in rural/semi-urban and low-income areas	Subsidized digital health programs, awareness initiatives
Job Displacement	Automation of administrative, diagnostic, and basic roles	Reskilling programs, positioning AI as support tool rather than replacement
Ethical Decision Making	Concerns over AI in life-critical decisions	Hybrid protocols combining AI and clinician input; advancing unbiased AI models
Regulatory Gaps	Loopholes in Indian regulations for AI in healthcare/tourism	Strict guidelines, compliance frameworks

These recommendations collectively aim to create an enabling environment where AI not only drives efficiency and revenue but also ensures ethical, inclusive, and sustainable growth aligned with global health objectives.

I. Ethical Governance as a Foundational Requirement

Responsible governance of AI emerges as a cross-cutting imperative throughout the literature. Ethical deployment requires proactive measures to safeguard patient autonomy, prevent harm from biased algorithms, ensure transparency in AI-driven decisions (especially in diagnostics and treatment recommendations), and uphold cultural sensitivity in diverse patient populations. India must strengthen regulatory oversight to close existing loopholes, enforce mandatory bias audits, implement explainable AI protocols, and mandate informed consent for AI-assisted processes. Alignment with global standards (e.g., UN 2021 Ethics report, WHO 2024 guidance) is critical to build trust among international patients and avoid reputational risks that could undermine India's competitive position.

J. Addressing the Digital Divide for Inclusive Growth

The persistent digital divide particularly between urban/metropolitan areas and rural/semi-urban regions remains a major barrier to equitable AI benefits. Low digital literacy, limited internet access, and socio-economic disparities in tier-2/3 cities and among low-income domestic/international patients restrict adoption. Mitigation requires subsidized digital health literacy campaigns, community-level training, affordable device distribution, and localized language interfaces for AI tools (chatbots, apps, wearables). Government-led initiatives must prioritize bridging this gap to prevent exacerbation of existing health inequities and to ensure AI-driven medical tourism truly contributes to SDG 10 (Reduced Inequalities) and SDG 3 targets for universal access.

K. Balancing Innovation with Risk Management in Cross-Border Contexts

Cross-border medical tourism introduces unique risks: data sovereignty issues, varying international privacy laws, potential for medical complications post-return, and infection transmission concerns. AI can mitigate these through predictive risk modeling, secure encrypted platforms, real-time remote monitoring, and automated follow-up protocols. However, robust risk management frameworks combining AI capabilities with clinician oversight are essential. Policies must address liability in AI-assisted decisions, standardize post-treatment continuity of care, and promote bilateral agreements on data sharing and emergency protocols to protect patients and sustain sector credibility.

L. Long-Term Vision: Positioning India as a Global Model for AI-Enabled Equitable Healthcare

By systematically addressing the above challenges and implementing the recommended strategies, India has the opportunity to evolve from a cost-driven medical tourism destination into a global exemplar of responsible, technology-enabled, equitable healthcare. AI integration—when guided by strong governance, inclusive infrastructure, skilled workforce, and multi-stakeholder partnerships can simultaneously drive economic growth, enhance patient outcomes, reduce global health disparities, and advance multiple SDGs (3, 8, 9, 10, 17). This positions India not only as a preferred destination for affordable, high-quality care but also as a contributor to worldwide efforts in achieving universal health coverage and sustainable development in health.

5. Conclusion

AI emerges as a pivotal transformative tool within the Indian medical tourism sector, empowering both patients and stakeholders through advanced capabilities such as customized recommendations, predictive analytics for accurate demand forecasting, and digital platforms facilitating seamless remote consultations and ongoing health monitoring. These innovations, as evidenced by interdisciplinary studies, optimize the patient lifecycle from pre-travel decision-making and destination planning to on-site treatment, post-treatment follow-up, and feedback collection ultimately elevating patient satisfaction, streamlining operational workflows, and fostering sustainable revenue generation in cost-effective ecosystems (Nagar et al., 2024) (Siddik et al., 2025). By addressing key globalization challenges, including risks of hospital-acquired infections during cross-border travel, AI enables secure remote healthcare platforms, preference-driven personalization, and resource-efficient practices that preserve environmental sustainability while aligning with economic influencers (Barua & Datta, 2024) (Gunaseelan & Kesavan, 2020). This not only positions India as a favored hub for diverse medical and wellness services but also mitigates broader issues like healthcare disparities and epidemic vulnerabilities highlighted in global reports (Bathla et al., 2024) (L. H. Chen & Wilson, 2013).

The broader implications of AI integration in Indian medical tourism for global health goals are multifaceted and significant. It promotes equitable and affordable access to high-quality healthcare, systematically bridging gaps in resource distribution and operational inefficiencies, while nurturing a shift toward predictive and preventive care models that reduce the burden of non-communicable diseases and premature mortality (Zuhair et al., 2024) (Koebe, 2025). In a developing context like India, where private sector dominance and traditional wellness resources (e.g., Ayurveda, Yoga) already provide a competitive edge, the ethical governance of AI—as emphasized in UN guidelines ensures responsible data usage, regulatory compliance, and cultural inclusivity (Muralidharan et al., 2025) (Vinuesa et al., 2020). This alignment directly supports core UN Sustainable Development Goals, such as SDG 3 (Good Health and Well-Being) through enhanced preventive strategies and universal coverage; SDG 10 (Reduced Inequalities) by democratizing access across socio-economic and geographic divides; SDG 9 (Industry, Innovation, and Infrastructure) via digital advancements; SDG 8 (Decent Work and Economic Growth) through new tech-driven employment; and SDG 17 (Partnerships for the Goals) by encouraging collaborative frameworks among governments, private entities,

and international partners. Ultimately, AI's role facilitates the globalization of healthcare services, positioning India as a model for low- and middle-income countries in achieving sustainable, inclusive health outcomes.

However, AI's potential to revolutionize the Indian medical tourism landscape hinges on a thorough comprehension of its dual implications optimization and efficiency on one hand, and ethical, regulatory, and equity challenges on the other. Conditional to robust mitigation strategies, collaborative policy development, and ethical implementation, AI can synergize with India's rich medical heritage to deliver long-term benefits, ensuring a healthier, more equitable global future.

6. Future Plans and Prospects

Building on the synthesized findings and strategic recommendations, this section outlines prospective pathways for advancing AI in Indian medical tourism, framed as actionable plans aligned with global health goals. These prospects emphasize systemic integration to maximize benefits while addressing identified barriers, drawing from interdisciplinary insights on governance, implementation, and continuous improvement.

A. Policy Formulation

To enable responsible and scalable AI adoption, India requires comprehensive policy frameworks developed through multi-ministerial collaboration (e.g., Health, Finance, Human Resource Development, and Tourism). These policies should prioritize ethical data governance, regulatory compliance, and alignment with international standards like the UN's "Ethics & Governance of AI use for health" (Muralidharan et al., 2025). Key elements include mandatory guidelines for data privacy, algorithmic transparency, and bias mitigation to prevent misuse in cross-border contexts. Policies must also incorporate incentives such as tax rebates for AI-driven sustainable practices and subsidies for digital infrastructure in tier-2/3 cities, fostering equitable access and reducing urban-rural divides (Asthana et al., 2023) (Kalita et al., 2023). By integrating with National Health Policy 2017 and SDG targets, these formulations can address corruption, financing gaps, and sectoral inequities, positioning India as a leader in ethical AI for healthcare globalization (Aarti, 2023) (Gera et al., 2018). Prospects include pilot programs for policy testing in states like Maharashtra and Kerala, with evaluations to refine nationwide rollout.

B. Proposed Incorporation Strategy

A phased incorporation strategy is proposed to harmonize AI with India's socio-economic landscape, starting with public-private partnerships to build digitally sound infrastructure (Behera et al., 2025) (Chatterjee & Dohan, 2021). Initial phases focus on metropolitan hubs for AI tools like chatbots, wearables, and predictive analytics (e.g., FdAI for demand forecasting), followed by expansion to tier-2/3 cities via telemedicine and remote monitoring platforms (Nagar et al., 2024) (Sumllika et al., 2024). Strategies should emphasize hybrid models combining AI with human expertise to avoid job displacement, including training modules for professionals in AI literacy and ethical decision-making (Ferenc et al., 2025). Incorporation must address cultural sensitivities and digital divides through localized interfaces and community outreach, ensuring inclusivity across diverse patient groups (Basumatary & Sarma, 2024) (Nittas et al., 2024). Long-term prospects involve international collaborations (e.g., with tech firms like Microsoft) to enhance competitiveness, projecting sector growth to USD 22–25 billion by 2031 while aligning with SDGs through sustainable resource optimization (Vinuesa et al., 2020).

A phased, multi-stakeholder incorporation strategy is recommended to systematically integrate AI into the Indian medical tourism sector. The strategy aims to balance rapid adoption in high-readiness areas with inclusive expansion to underserved regions, while ensuring ethical governance, workforce readiness, and alignment with global health goals (SDGs 3, 8, 9, 10, 17).

Phase 1: Foundation & Pilot Implementation (Short-term: 12–24 months)

Objective: Establish core infrastructure, test AI tools in controlled environments, and build regulatory & ethical foundations.

Key Actions:

- Form multi-ministerial task force (Health, Tourism, Finance, HRD, IT) to draft AI-specific guidelines aligned with UN/WHO ethical frameworks (Muralidharan et al., 2025) (WHO, 2024).
- Launch pilot projects in 3–5 major metro hubs (e.g., Delhi-NCR, Mumbai, Bangalore, Chennai, Hyderabad) focusing on high-impact AI applications:
    - AI chatbots & recommendation engines for pre-travel decision-making and personalization (S. Sharma et al., 2023).
    - Predictive demand forecasting models (e.g., FdAI) using historical data, patient reviews, and economic indicators (Nagar et al., 2024).
    - Telemedicine + remote monitoring platforms for initial consultations and post-treatment follow-up (Bathla et al., 2024).
- Develop and enforce baseline data privacy & security standards (end-to-end encryption, consent frameworks, regular audits).
- Initiate public-private partnerships (e.g., similar to Apollo-Microsoft model) for technology transfer and co-funding.

Responsible Entities: Government ministries, private hospital chains, tech companies, academic institutions.

Expected Outcomes:

- Functional AI pilots demonstrating 30–50% reduction in waiting times and improved patient satisfaction.
- Draft national AI policy framework ready for public consultation.
- Initial dataset of real-world performance metrics for refinement.

Phase 2: Scaling & Capacity Building (Medium-term: 24–48 months)

Objective: Expand AI coverage to tier-2 and tier-3 cities, build human capital, and address digital & cultural divides.

Key Actions:

- Roll out AI-enabled infrastructure (high-speed connectivity, interoperable EHR systems, AI-compatible diagnostic tools) in 15–20 emerging medical tourism cities (e.g., Jaipur, Chandigarh, Pune, Coimbatore, Ahmedabad, Lucknow).
- Implement large-scale reskilling & training programs for healthcare professionals, tourism staff, and support personnel:
  - AI literacy, hybrid human-AI workflow training, ethical decision-making modules.
  - Certification courses on data interpretation, bias detection, and patient communication (C. Sharma & Sahu, 2025).
- Localize AI tools: multilingual interfaces, culturally sensitive recommendation algorithms, community-level digital health literacy campaigns (Basumatary & Sarma, 2024) (Nittas et al., 2024).
- Strengthen hybrid decision protocols: mandatory clinician oversight in life-critical AI outputs (Bajwa et al., 2021).
- Launch subsidized digital access programs (devices + training) for rural/semi-urban providers and low-income patient groups.

Responsible Entities: State governments, private healthcare providers, ed-tech & health-tech startups, NGOs, Ayushman Bharat Digital Mission team.

Expected Outcomes:

- AI adoption in 40–50% of tier-2/3 medical tourism facilities.
- Measurable reduction in urban-rural healthcare access gap.
- Workforce with 50,000+ trained personnel in AI-augmented roles.
- Early evidence of job creation in health-tech, data analytics, and AI maintenance (SDG 8 alignment).

Phase 3: Optimization, Integration & Global Positioning (Long-term: 48–72 months & beyond)

Objective: Achieve full-sector integration, continuous refinement, and establish India as a global model for responsible AI-enabled medical tourism.

Key Actions:

- Integrate AI across the complete patient lifecycle (search → planning → treatment → follow-up → feedback) in 70–80% of accredited facilities.
- Institutionalize continuous refinement mechanisms:
  - Regular algorithmic bias audits and updates.
  - Real-time performance dashboards for demand forecasting accuracy.
  - Cross-border data governance protocols (bilateral agreements for secure sharing).
- Foster international collaborations for knowledge exchange, joint R&D, and benchmarking (e.g., with ASEAN, EU health-tech ecosystems).
- Promote AI as a differentiator in global marketing: highlight preventive/predictive care, equity focus, and SDG alignment in branding campaigns.
- Establish national monitoring & evaluation framework with annual SDG impact reporting (health equity, economic growth, innovation metrics).

Responsible Entities: Central & state governments, industry associations (e.g., FICCI Health Services), international organizations (WHO, UN agencies), global hospital chains & tech partners.

Expected Outcomes:

- Sector valuation growth trajectory toward USD 22–25 billion by 2031 with AI as primary driver (India Medical Tourism Market Growth, 2026).
- Demonstrable contributions to SDG 3 (reduced NCD mortality, universal coverage), SDG 10 (reduced inequalities), and SDG 17 (strong partnerships).
- India recognized internationally as a scalable, ethical model for AI in medical tourism for low- and middle-income countries.

This phased incorporation strategy ensures progressive, inclusive, and responsible AI adoption — starting from proven urban pilots, expanding equitably, and culminating in sustainable global leadership.

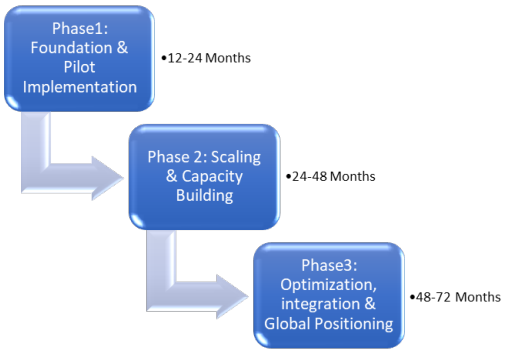

Fig. 1. Proposed implementation strategy with timeline

C. *Refinements Required*

Refinements are essential to overcome persistent challenges, including algorithmic biases through regular audits and innovations for unbiased diagnostics (Hou et al., 2025) (Wubineh et al., 2024). Data security enhancements via end-to-end encryption and consent frameworks are critical to build patient trust in cross-border scenarios (Bentley, 2024) (Tripathi & Shalki, 2023). To address digital inequities, refinements should include subsidized programs for rural AI education and infrastructure upgrades, narrowing the urban-rural gap (Pati et al., 2025) (Bhatt, 2024). Ethical refinements demand hybrid decision protocols in life-critical situations, ensuring AI augments rather than replaces clinicians (Bajwa et al., 2021) (S. Singh, 2016). Regulatory gaps require stricter guidelines for compliance, with refinements focusing on scalability and cultural variance (Kickbusch, 2026) (Guzmán, 2024). Overall, iterative evaluations and stakeholder feedback will refine these

elements, enhancing AI's alignment with global health goals and sustainable practices.

7. Limitations

This narrative review, while comprehensive, is subject to several inherent limitations that warrant careful consideration. Primarily, the analysis relies on 115 studies predominantly from the 2010–2025 timeframe, with selective inclusion of earlier seminal works for contextual relevance. This temporal constraint may overlook very recent advancements in AI applications post-2025, such as emerging integrations in post-pandemic wellness tourism or real-time AI diagnostics, potentially limiting the review's currency in a rapidly evolving field. The interdisciplinary nature of the topic necessitated drawing from diverse sources across healthcare, tourism, and digital health domains, which introduces inconsistencies in methodological rigor, depth of analysis, and theoretical frameworks—some studies emphasize empirical data while others are more conceptual, leading to potential imbalances in evidence synthesis.

Furthermore, the eligibility criteria restricted inclusion to English-language publications due to language barriers, which may have induced selection bias by excluding valuable non-English research from regions like Europe or Asia where medical tourism scholarship is prominent. This linguistic limitation could undervalue culturally specific insights relevant to India's diverse socio-economic context. The narrative approach, while suitable for thematic exploration, lacks the quantitative precision of systematic reviews, possibly introducing subjectivity in theme identification and gap analysis. Additionally, the review's focus on published literature may underrepresent unpublished or Gray literature, such as industry reports or ongoing pilots, which could provide practical insights into AI implementation challenges. These limitations collectively suggest that the findings, though robust within the scoped parameters, should be interpreted with caution and supplemented by ongoing empirical validation to enhance generalizability.

8. Future scope

Looking ahead, the future scope for research on AI in Indian medical tourism lies in empirical and applied investigations that build on this narrative foundation to generate actionable evidence. One promising avenue is conducting case studies on real-world AI implementations in key states (e.g., Maharashtra, Kerala, Karnataka), evaluating outcomes in patient satisfaction, operational efficiency, and revenue impacts through mixed-methods approaches. Quantitative longitudinal studies could assess AI's effects on patient health metrics, such as NCD prevention rates and post-treatment recovery, using metrics like reduced mortality or cost savings to quantify contributions to SDG 3.

Researchers should explore AI's integration with wellness tourism, examining how tools like wearables and virtual reality enhance traditional practices (e.g., Ayurveda) and align with broader SDGs, including environmental sustainability (SDG 12) and partnerships (SDG 17). Comparative analyses between India and other developing nations (e.g., Thailand, Turkey) could highlight best practices in ethical AI governance and cross-border data management. Advanced studies might leverage emerging technologies, such as machine learning for bias-free algorithms or blockchain for secure health data, to address current gaps in equity and privacy. Interdisciplinary collaborations could investigate socio-cultural impacts, like AI's role in reducing gender disparities in healthcare access. Overall, future research should prioritize scalable, policy-relevant designs to inform India's trajectory toward a $22–25 billion sector by 2031, fostering global health innovations.

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