

**Exploring the impact of the MedTech industry on the growth of Medical
Tourism in India**

Dissertation Submitted to



The IIHMR University, Jaipur

For the partial fulfillment of the award degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

By Dr. Manjaree Bose

Under the Supervision and Guidance of

Dr. Arindam Das

2023

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Exploring the Impact of MedTech Industry on the growth of Medical Tourism in India** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Dr. Manjaree Bose

INTERNSHIP CERTIFICATE



Orbees Business Solutions Pvt. Ltd.

Q1, B1, B2, B3, 8th Floor, Cyber Towers, Hitec City, Madhapur, Hyderabad – 500 081. CIN: U72200TG2006PTC049670
Tel: +91 - 040 - 2311 4722, Fax: +91 - 040 - 2311 4723. info@orbees.com | www.orbees.com | www.orbeesmedical.com

22nd May 2023
Hyderabad

To

Ms. Manjaree Bose
105, Swagat Park Apartments, Friend's Colony,
Nagpur-06, Maharashtra - 440 001.

Dear **Ms. Bose**

Internship Experience Letter

This letter also certifies that **Ms. Manjaree Bose** is doing internship with Orbees Business Solutions Pvt Ltd from **21st February 2023** to **till date** and her role is Intern – Senior Analyst

We wish her all the best for her future endeavors.

For **Orbees Business Solutions Pvt. Ltd**

A handwritten signature in blue ink, appearing to read 'Rakesh Valluru'.

Rakesh Valluru
Sr. Manager - Operations



CERTIFICATE

This is to certify that the dissertation titled **Exploring the Impact of MedTech Industry on the growth of Medical Tourism in India** is a record of the research work undertaken by **Manjaree Bose** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision, and her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide

IIHMR University, Jaipur
Jaipur

Date

School Dean

IIHMR University,

Date

Abstract:

This thesis investigates how the MedTech sector has influenced the rise of medical travel to India. The goal is to investigate how developments in medical technology have impacted the growth and long-term viability of India's medical tourism industry. This research intends to offer insights that help guide policy decisions, encourage innovation in the MedTech sector, and promote India as a desirable destination for medical tourists by examining the interaction between the MedTech business and medical tourism.

The thesis also looks at the factors that have contributed to India's growing appeal as a destination for medical tourism. It emphasizes the accessibility of a variety of medical procedures, including but not limited to reproductive treatments, cardiac surgery, orthopedic therapies, and aesthetic surgeries.

The study also investigates the problems and potential areas for development in the Indian medical tourism and MedTech sectors. These include the necessity for ongoing technology adaptation as well as regulatory frameworks, affordability, accessibility, and quality standards. The MedTech sector can help the medical tourism sector in India develop and be sustainable by addressing these issues.

Overall, this thesis clarifies the complex connection between the MedTech sector and the rise of medical tourism in India. It adds to the body of knowledge by shedding light on how medical technology aids in luring and supporting medical tourists. The results of this study can help policymakers, healthcare professionals, and industry stakeholders make decisions that will promote the expansion of the MedTech sector and medical tourism in India.

Acknowledgment

I want to extend my sincere gratitude to everyone who helped finish this thesis on Exploring the Impact of MedTech Industry on the growth of Medical Tourism in India. I would like to pay sincere regards to my faculty guide Dr. Arindam Das, for his constant guidance and motivation during my dissertation. Secondly, I want to thank my industry mentors, Mr. Jon Pillai and Mr. Ramesh. S (CEO and Co-founder) for the best learning opportunity any student can get.

I would like to thank my family and friends for their unwavering support and encouragement throughout the MBA curriculum. Thank you to all who have contributed directly or indirectly to the completion of this thesis. Your support is deeply appreciated.

Finally, I would like to say cheers! To every one of my cherished batchmates for completing MBA with flying colours and for the lifetime friendships we have fostered over the past two years.

Dr. Manjaree Bose

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Introduction

India has long been a destination for people seeking traditional medicine and Ayurveda treatments, and this practice can be traced back to the country's early history. The foundation for India's status as a center for holistic healing techniques was built by its ancient medicinal traditions, including Ayurveda, Yoga, and Siddha. In order to offer its population readily available and reasonably priced healthcare services, India's government gave the construction of its healthcare infrastructure a top priority when the country attained independence. As the economy opened in the 1990s, the private sector became more involved in healthcare, putting up private hospitals and clinics with cutting-edge medical equipment. MedTech Industry also grew parallelly. The availability of cutting-edge medical technologies and equipment increased with the relaxation of trade restrictions and the entrance of international medical device manufacturers. Medical tourism began to take off after India's healthcare system received praise from around the world for its high standards of care and affordability. The expansion of the medical tourism industry is benefiting from the expansion of the MedTech sector in India. Indian hospitals are receiving cutting-edge medical equipment and technologies from MedTech companies there, which is enhancing the country's standard of healthcare. As a result, international medical tourists are finding India to be increasingly alluring. The impact of the MedTech sector on the expansion of medical tourism in India is a noteworthy topic for research since it can help to pinpoint the elements influencing this sector's expansion. The goal of this study is to advance our understanding of the connection between India's medical

tourism industry and the MedTech sector. The research intends to identify the important elements influencing the expansion of medical tourism in India by examining the function of cutting-edge medical technologies, tools, and partnerships that exist between the MedTech industry and health care providers. Policymakers, healthcare providers, technology-based businesses, and other industry stakeholders will all be impacted by the research's conclusions. The insights can be used by policymakers to create plans that advance the MedTech sector and establish India as a top destination for medical tourism.

Literature Review:

Table 1:

S no.	Author	Title	Findings
1.	S. Shah, Maurvi Vasavada, Arzina Karim	An Empirical Study of Factors Contributing to International Patients Satisfaction with Special Reference to Medical Tourism in India (S. Shah, 2022) (2022)	This study tries to identify the elements that influence how satisfied foreign patients are with their care in India. According to data analysis, foreign patients choose their destinations based on the quality and affordability of their medical care, as well as a one-stop facility for several medical treatments and shorter wait times. In India, very little research has been done on medical tourism. There is a gap in knowledge on this topic in Western India and filling it will expand the small pool of knowledge and open new opportunities for the academic community, the business community, and society at large.
2.	Dr. Aditi Sharma, Dr. Nirajan Prasai, Dr. Puneeta Ajmera, Sheetal Yadav, Dr. Samragi Madan	Challenges Faced By Medical Tourists In India And Its Growth Prospects	This study discusses medical tourism, which is any journey for medical care to another country. For several nations, including India, Thailand, and several South American nations, medical tourism has grown to be one of their major industries. Additionally, many medical tourists travel to nations like Singapore and Malaysia. Access to all necessary services is made quicker and simpler thanks to medical tourism. Regarding various perspectives, such as the patient, the hospital's financial situation, and the nation, medical tourism is quite significant. This study's primary goal is to identify and comprehend the many difficulties that India's medical tourism industry is now experiencing. The study covered all patients from abroad, regardless of age group. Based on the questionnaire's

			findings, it was shown that most of medical tourists came to India solely for treatment. Their trip to India was not primarily motivated by the country's low costs; rather, they went because of the country's superior medical care, services, staff, and doctors. Medical tourists appeared to have excellent opinions of the doctors and average opinions of the nurses and services.
3.	Neha Malhotra Kartik Dave	An Assessment of Competitiveness of Medical Tourism Industry in India: A Case of Delhi NCR	With the help of this study, Indian stakeholders may develop a successful strategy by understanding the major driving forces behind the medical tourism sector in India. Data were gathered using a semi-structured in-depth interviewing technique with professionals and senior members of the hospital management. A qualitative study approach was used. Data were assessed using the constant comparison method and abduction logic in the study. The report provides an evaluation of the Indian medical tourism market as well as the range of opportunities available to Indian participants.
4.	Vinaytosh Mishra Mohita G. Sharma	Framework for Promotion of Medical Tourism: A Case of India	This study examines the reasons behind the poor saturation of medical tourism in the area using the example of the eastern section of the state of Uttar Pradesh. The study uses a focus group discussion to identify characteristics influencing medical tourism in after COVID times and map them with enablers. The study also makes use of SERVQUAL, an extensive research tool that records patients' expectations and impressions along five service quality dimensions. The study adds to the body of knowledge in two different ways. It offers the basis for a region's marketing of medical travel. Second, it offers potential lines of inquiry for medical tourism research in the post-COVID era.
5.	Anita Medhekar, Ho Yin Wong	Medical travellers' perspective on factors affecting medical tourism to India	The goal of this study is to determine the demographic profile and investigate the elements that, in the eyes of N-600 patients, influence their decision to take a trip to India for medical tourism. According to the data, medical tourism is a two-factor phenomenon

			that involves both travel and medical care. Other important elements are information search, surgery waiting time, hospital staff, hospital precision, and quality accreditation. Practical ramifications of the findings point to the need for supply-side stakeholders to collaborate in developing policies that provide medical travelers & tourists with centered care in order to achieve successful healthcare outcomes.
6.	R. Sharma, N. Bharti, S. Malik	Development of medical tourism in India: prospects and challenges	With a CAGR of 21.1%, the medical tourism sector has the fastest rate of growth globally. This study seeks to trace the conceptual tendencies and intellectual development in the rise of medical tourism while considering the industry's potential for expansion. Utilizing the Scopus database between 2006 to 2020, bibliometric analyses were done to accomplish the goal. Data mining and literature studies that consider evolution, citations, and the creation of semantic maps utilizing VoS Viewer are the methodologies utilized to analyse literature. The report also tries to suggest future research directions by analysing the current study trend in this area. The findings show how the field has changed in terms of effect, citations, and sources while also giving academics and industry professionals a clear picture of this field's body of work.
7.	Amit Dang, Jitendar Kumar Sharma	Economics of Medical Devices in India	In India, 75% of the medical equipment is imported. Much of the technology used in developing nations was created for use in industrialised nations, according to the WHO. The needs for healthcare have altered over the past ten years due to the rise in non-communicable disease incidence, survival rates, population ageing, and decline in communicable disease incidence and mortality rates. In addition to these factors, the need to meet national healthcare goals, the awareness of patients and healthcare providers, and proximity to developed nations are encouraging the growth of domestic medical device industries. The laws and norms governing medical equipment,

			however, are hazy and unclear. In order to control the production, import, sale, clinical research, and other relevant activities involving medical devices, the Health Ministry of India has published the Medical Devices Rules, 2016. Additionally, the government provides startup money for the medical device industry. Additionally, the government of India initiated an inverted duty structure. Additionally, specialised medical technology zones are being established, which will increase local manufacturing for the local population and create jobs for locals.
8.	Indira Chakravarthi	Medical Equipment Industry in India Production, Procurement and Utilization	The production, procurement, and utilization-related operations of significant industry players are included in this article's information on the Indian medical equipment market.
9.	Szymon Jaroslawki, Gayatri Saberwal	Case studies of innovative medical device companies from India: barriers and enablers to development	Close collaboration with local medical professionals, connections to international research and technology, and compliance with international regulatory standards have all facilitated product invention. The main difficulties were the lack of advice on product requirements from the national regulatory body, the scarcity of institutionalized payers for health care, and the lack of formalized assessments of health technologies in decision-making on coverage. Addressing the poorly regulated and dispersed private sector was significantly hampered by the lack of national evidence-based recommendations and mandatory continuing education for medical professionals.
10.	Ashish Barua, Ashish Aggarwal, Alok Agrawal	The Indian Medical Device Industry: Past, Present, and Future	One of the sectors with the highest global growth is the medical device market in India. Over the following five years, the industry is anticipated to expand at a 15% CAGR. Multinational corporations' control most of the medical device market in India. However, there are more and more domestic participants in the market. The issues facing the medical device industry are being addressed by the Indian government in

			several ways- Setting up medical device parks is one of these steps. assisting domestic players financially and streamlining the regulatory structure.
11.	Manas Manu Gaurav Anand	A review of medical device regulations in India, comparison with European Union and way-ahead	One of the top 20 markets in the world for medical equipment is India. Due to the lack of domestic manufacturing of various medical devices, India still imports more than 70% of its needs. Medical gadget manufacturing and monitoring are strictly governed processes. The Drugs and Cosmetics Act, 1940, which governs drugs and cosmetics, served as India's primary medical device legislation. The 2017 version of the Indian Medical Device Rules was published by the Central Drug Standard Control Organization to close this gap. the Medical Devices (Amendment) Rules, 2020, which went into effect in April 2020, were later revised. The standards represent a positive move and cover the majority of the European Union (EU) approval procedure, which requires that the devices be secure and carry out their intended purposes.

Methodology:

Objectives:

Determine the major trends, obstacles, and opportunities for both industries.

To assess the current situation of the Indian MedTech industry, including the sorts of technologies being produced, the regulatory framework, and the industry's key players.

To explore the variables driving the expansion of medical tourism in India, such as healthcare affordability, access to innovative therapies, and care quality.

Study design:

Narrative/Traditional Literature Review

Source of Data:

- Consulting papers
- PubMed
- ScienceDirect
- Researchgate
- Google Scholar
- Government websites
- Industry expert's comments
- Press releases

Medical Tourism in India:

India is becoming a major player in the medical tourism business, which is a rising sector in the nation, drawing patients from all over the world looking for high-quality and affordable healthcare treatments. The nation provides a wide range of medical services, including fertility treatments, cardiac surgery, orthopedic procedures, organ transplants, and more. Shorter waiting times, individualized care, globally certified hospitals, highly trained medical staff, and reduced care prices in comparison to industrialized countries are all factors that contribute to India's reputation as a hub for medical tourism.

India ranks 7th among the 20 health tourism markets because of the affordable treatments offered there. Over 560 million trips are made to India each year for medical tourism, which brings in 16.3 billion USD annually. In Asia Pacific nations that prioritize well-being, it comes in 3rd. Despite the difficulties caused by the epidemic, India received about 650,000 medical tourists in 2022, according to another report by the Federation of Indian Chambers of Commerce & Industry (FICCI).

Private businesses have been able to take advantage of this market opportunity thanks to the rise of medical tourism in India, and the Indian government has created a variety of facilities and programs to aid in the growth of the medical tourism sector in the nation. India's healthcare system is distinct from that of other countries because it mixes traditional and contemporary medical techniques. First, compared to other countries, it has a wide range of top-notch hospitals and medical specialists. Second, the world is today becoming very interested in the oldest forms of Indian medicine, like Ayurveda, Yoga, Panchakarma Rejuvenation Therapy, etc. In 2019, the industry generated over 1 million employment and generated \$6.8 billion in revenue; by 2025, it is predicted to generate \$15.6 billion in revenue. In the upcoming years, it is anticipated that the industry's expansion will increase employment levels and strengthen the Indian economy.

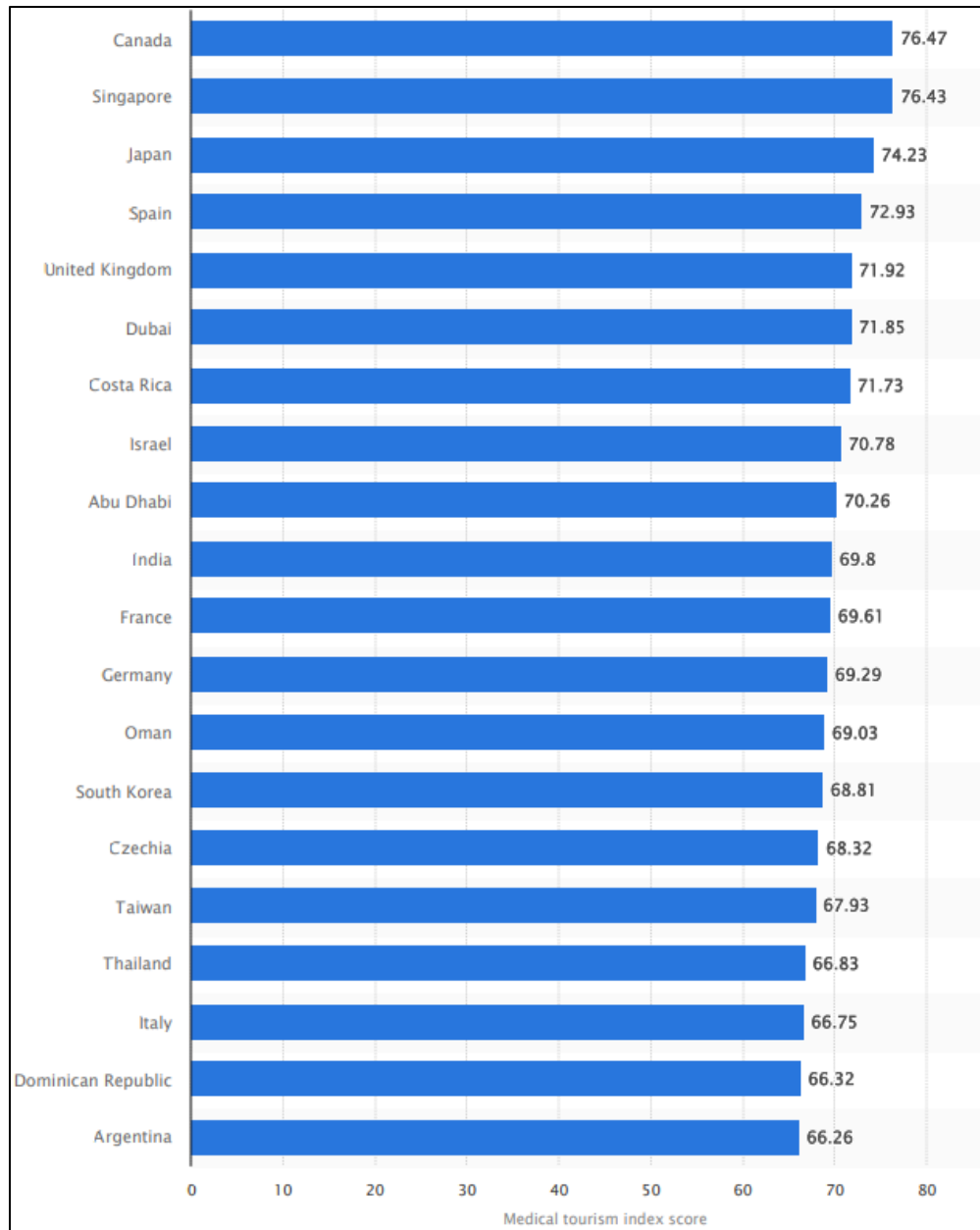


Fig (i)

Source: Statista

Top 20 destinations worldwide based on the total medical tourism index in 2020.

Canada surpassed the 46 destinations in the world for medical tourism in 2020–2021, earning an index rating of 76.47. The indicator relies on evaluations of the environment of the travel destination, the medical tourism sector, and the standard of amenities and services.

Through medical tourism, India is becoming more and more popular for a variety of procedures. India has been popular for several therapies, including the following:

- **Ayurvedic therapies:** Medical tourists looking for holistic wellness and healing highly regard India's traditional Ayurvedic medical system. Ayurvedic remedies, including massages, herbal treatments, detoxification plans, and lifestyle changes, are well-liked.
- **Cardiac Surgery:** India is known for having cutting-edge cardiac care facilities. For procedures like sophisticated cardiac surgery, angioplasty, cardiac valve replacements, and coronary artery bypass grafting (CABG), patients travel to India. India is a popular choice for cardiac treatments due to its knowledgeable cardiac surgeons, cutting-edge technology, and reasonable prices.
- **Treatments for Infertility:** India has been known as a location for IVF and other assisted reproductive techniques. IVF, IUI, surrogacy, and fertility-enhancing therapies are among the medical tourism services offered in India. Families seeking answers to their infertility can find cost-effective solutions in India, where there are cutting-edge fertility clinics and skilled reproductive specialists.
- **Orthopedic Procedures:** A variety of orthopedic procedures and therapies are available in India. Patients travel to India for arthroscopic treatments, knee replacements, spinal surgery, and sports medicine intervention.
- **Cosmetic and reconstructive surgery** centers are increasingly being established in India. Patients from all around the world travel to India for surgeries like body sculpting, liposuction, rhinoplasty, and breast augmentation. India has top-notch plastic surgeons, cutting-edge equipment, and affordable solutions for aesthetic improvements.

- **Dental treatment:** Dental tourists travel to India for oral surgery, dental implants, dental crowns, and root canals. When weighed against many other nations, India provides superior dental treatment, trained dentists, and cost savings.
- **Cancer therapies:** India offers thorough cancer care, luring medical travelers looking for reasonably priced and high-quality cancer therapies. In the best cancer hospitals around the nation, cutting-edge cancer medicines like radiation treatment, chemotherapy, targeted therapeutics, and surgical interventions are accessible. India is a desirable location for cancer treatment due to its renowned physicians, multidisciplinary teams, and affordable solutions.
- **Ophthalmic Treatments:** India has made a name for itself as a location for a range of eye procedures and treatments. By competent ophthalmologists using cutting-edge technology, LASIK surgery, corneal transplantation, and various other ocular treatments are carried out.
- **Organ Transplants:** India has a reputation for having effective organ transplant programs, including those for kidney, liver, heart, and bone marrow transplantation, and is getting popular due to the availability of qualified transplant surgeons, well-equipped transplant centers, and a sizable pool of possible donors.

India's top destinations for medical tourism are:

- Chennai - "Health Capital of India"
- Delhi
- Mumbai
- Bangalore
- Hyderabad
- Kolkata
- Alleppey

- Ahmedabad
- Goa
- Vellore

Factors influencing the growth of medical tourism in India:

- Cost-Effective: When compared to many first-world countries, India's treatment prices are much lower. Particularly for procedures like surgery, organ transplants, fertility treatments, and cosmetic surgeries, this cost advantage draws clients looking for high-quality healthcare at reasonable costs.
- High-quality healthcare infrastructure and accessibility to sophisticated technologies: India has made enormous expenditures in healthcare infrastructure, embracing cutting-edge medical technologies and performing cutting-edge surgeries. India is an appealing choice for medical tourists because it offers affordable access to the most cutting-edge diagnostic equipment, imaging technologies, robotic procedures, and other cutting-edge therapies,
- Medical Professionals with High Skill Levels: India boasts a sizable pool of highly qualified and seasoned medical specialists. India is a desirable location for individuals seeking specialized medical care because of the knowledge and skills of Indian medical specialists in a variety of medical specialties, including cardiology, orthopedics, oncology, and reproductive treatments.
- Unconventional and Traditional Medicine: individuals looking for holistic and alternative healing techniques are drawn to India's rich heritage of age-old medicinal systems, including Ayurveda, Yoga, and Siddha.
- Language and Cultural Compatibility: English is a language that is widely spoken and understood throughout India. It is simpler for

overseas patients to interact with doctors, follow healthcare processes, and receive individualized care due to this linguistic advantage. Also, due to the friendly and inviting culture, patients feel more encouraged and at ease through their medical journey.

- Accreditations and certifications: National Accreditation Board for Hospitals & Healthcare Providers (NABH) and Joint Commission International (JCI) are two renowned organizations that have awarded numerous hospitals and healthcare facilities in India. These certifications demonstrate compliance to international norms for patient care and quality, giving medical tourists peace of mind regarding the dependability and security of Indian healthcare services.
- Government Support and steps: The Indian government has taken a number of steps to promote medical tourism after realizing its potential. These include the formation of specialized departments for medical tourism as well as simplified visa procedures and relaxed travel restrictions. The total expansion of the industry has been significantly boosted by government support.
- Enhanced Connectivity and established Medical Assistance Services: India has a refined transportation infrastructure as well as a remarkable network of medical facilitators and health tourism firms. The ease of access makes it simpler for individuals to travel to India's desirable locations and these firms aid medical tourists by assisting with services including setting up appointments, assistance with visas, travel arrangements, lodging, and post-treatment care, guaranteeing a flawless experience.

Factors challenging the growth of medical tourism in India:

India's medical tourism industry has grown significantly, but there are also some obstacles that have caused it to lag behind some other nations. Among the principal challenges are:

- Awareness & Perception: Despite improvements in India's healthcare system, there are still issues with perception and lack of understanding among prospective medical tourists.
- Infrastructure Disparities: There are still gaps in healthcare availability and quality, despite major Indian cities having state-of-the-art hospital facilities. Long wait times and subpar facilities might result from poor infrastructure.
- Concerns about Patient Safety and Quality Control: Maintaining high standards for patient safety and quality control are essential for the efficacy of medical tourism. Even though India is home to many world-class medical facilities, sporadic mishaps or unfavorable views might undermine patients' confidence.
- Insurance Coverage and Regulations: Potential medical tourists may be put off by India's lack of comprehensive health insurance for medical procedures. It may be financially difficult for patients to explore medical tourism because certain insurance providers might reject treatments or operations completed outside of their home country. In India, different states have different licensing requirements, which might complicate the claim reimbursement process.
- Accreditation & Standardization: Although a few hospitals and clinics in India have received foreign accreditation, a more uniform and open accreditation process is still required across the nation.
- Travel and connectivity issues: Although India has a strong transportation network, including international airports and internal

connectivity, some patients nevertheless face lengthy journey times. Patients who prefer shorter travel periods or have medical issues that make long-distance travel difficult may be discouraged by long-haul airfares and travel logistics.

- Language and Cultural Barriers: Although contact between foreign patients and India's English-speaking medical staff is facilitated, barriers still exist due to language and cultural barriers. Some patients might feel better at ease receiving medical care in nations where there are fewer language obstacles and where cultural norms are more like their own.
- Competing Destinations: India is up against other nations that have established themselves as centers for medical tourism. A few nations, like Thailand, Singapore, Malaysia, and Mexico, have a solid reputation for medical tourism and actively promote their services to patients from other countries. India's market share may be impacted by the fierce competition in the international medical tourism business.

Government's role in Medical Tourism:

Indian Government is pursuing a number of actions to promote medical tourism. It is believed that initiatives like 'Heal in India', building new hospitals-medical facilities, training healthcare professionals, and streamlining the process of visa will aid India in its goal of dominating the worldwide medical tourism industry. With approximately 2.8 million medical tourists traveling in 2019, India was the sixth most popular medical tourism destination worldwide. By 2025, the government projects that this number will increase to 5 million.

The following are a few of the particular actions the government is taking to encourage medical tourism in India:

- **Extending the e-medical visa facility:** To encourage medical tourism in India, the government of India is expanding the e-medical visa provision to the people of 156 countries.
- **Heal in India:** The effort seeks to standardize treatment plans for visitors from other countries seeking reasonably priced treatment plans. It features a digital gateway that can make navigating the medical process easier for people from other countries. Additionally, this would help patients locate the closest healthcare providers and facilities in India and traverse the range of available treatments. Indian healthcare professionals would have the possibility to relocate abroad to further their careers as part of the Heal by India initiative. The program aims to persuade Indian healthcare professionals to travel abroad and treat patients everywhere.
- **National Medical & Wellness Tourism Board:** To encourage medical and wellness travel to India, the Ministry of Tourism formed the National Medical & Wellness Tourism Board in July 2021.
- **Pradhan Mantri-Ayushman Bharat Health Infrastructure Mission:** A \$1 billion loan from the World Bank was authorized in July 2022 for India's Pradhan Mantri-Ayushman Bharat Health Infrastructure Mission. Through the program, businesses will be able to use the fund to increase hospital capacity or purchase medical equipment with the backing of the government, strengthening the COVID-19-related health systems in smaller towns.
- **Government assistance and policy:** The Indian government intends to implement a number of policies and efforts to strengthen the country's healthcare industry. The Ministry of Health and Family Welfare (MoHFW) received Rs. 89,155 crores (US\$ 10.76 billion) from the government in the Union Budget 2023–24.

Some of the reputed medical tourism coordinators and firms present in the nation are:

- Indicure
- MedGinnie
- Vaidam Health
- Medsurge India
- Dania Medicare
- Clinicspots
- Global Treatment Services
- ARINAA Medical Tourism
- Medmonks
- Tour2India4Health consultants
- MedTourEasy
- IndianMedTrip
- Alphine Life Solutions
- MediConnect India
- Peace Medical Tourism
- ANAVARA

Price comparison with USA

Table 2.1: Medical Procedures

Procedure	US Hospitals	India	Avg savings
Angioplasty	\$57,000	\$12,000	81%
Heart Bypass	\$130,000	\$11,000	95%
Heart valve replacement	\$160,000	\$10,000	96%
Knee replacement	\$40,000	\$9,000	88%

Table 2.2: Plastic and Reconstructive Surgery

Procedure	US Hospitals	India	Avg savings
Face Lift	\$9,000	\$5,000	44%
Breast Reduction	\$6,000	\$3,000	50%
Complete Liposuction	\$6,500	\$3,500	50%
Nose Surgery (Rhinoplasty)	\$6,500	\$2,500	72%

Table 2.3: Ophthalmology

Procedure	US Hospitals	India	Avg savings
Cataract surgery	\$2,500	\$1,500	40%

Table 2.4: General and Cosmetic Dentistry

Procedure	US Hospitals	India	Avg savings
Root Canal	\$1,000	\$150	85%
Dental Implant	\$3,500	\$800	80%

Price comparison with UK:

Table 3.1: Medical Procedures

Procedure	UK Hospitals	India	Avg savings
Coronary Angioplasty	\$15,000	\$12,000	23%
Hip Replacement	\$14,500	\$10,000	40%

Table 3.2: Plastic and Reconstructive Surgery

Procedure	UK Hospitals	India	Avg savings
Breast Reduction	\$9,000	\$3,000	75%
Liposuction	\$6,000	\$3,500	60%
Nose Surgery (Rhinoplasty)	\$6,500	\$2,500	73%

Table 3.3: General and Cosmetic Dentistry

Procedure	UK Hospitals	India	Avg savings
Root Canal	\$400	\$150	67%
Dental Implants	\$4,000	\$800	83%

MedTech Industry in India:

India's MedTech sector has grown significantly in recent years due to several causes, including rising healthcare costs, a rise in demand for cutting-edge medical technologies, government efforts, and an emphasis on innovation and research. This sector is still in the formative stages, but due to the nation's aging population, favorable government regulations and policies, increased health insurance invasion, and expanding medical tourism, it is anticipated to develop dramatically in the next years. Industry includes telemedicine, diagnostics, medical equipment, implants, telehealth, medical records systems, and other innovations that help with illness management, prevention, and treatment. Significant investments, partnerships with foreign businesses, and the creation of local medical technology have all occurred in the Indian MedTech sector.

In India, there are 750–800 indigenous medical device producers, who together constitute 65% of the total market. Most medical devices produced in India are disposables, such as intravenous catheters, cannulas, needles, extension lines, perfusion sets, feeding tubes, and syringes, also implants, such as cardiac stents, drug-eluting stents, intraocular lenses, and orthopedic implants. The Indian medical device industry's start-up ecosystem is expanding as well. In terms of market size, the Indian market is one of the top 20 markets worldwide. After China, Japan, and South Korea, it comes 4th in Asia. The market in India is expected to grow quickly, thus medical technology (MedTech) businesses are looking to increase their presence there. India's market for medical devices is currently valued at approximately USD \$11 billion, and in the years to come, it is anticipated that India's portion of the global market for medical devices would rise.

India's MedTech market is anticipated to expand at a CAGR of 28% between 2022 and 2027 and reach a value of \$50 billion by 2030. 70–80% of the medical equipment market in India is fueled by imports from the USA, China, and Germany. In India, the market shares of the major segments of medical devices vary. Medical equipment and appliances make up much of the market (34%), next to diagnostic imaging equipment (31%), consumables and prostheses (19%), & patient aids and miscellaneous items (16%). Meanwhile, India does not produce many medical gadgets domestically and currently imports over 70% of them. Medical device businesses have a great potential to fill the import vs. production gap by producing their products domestically. With top-notch medical professionals, facilities, and equipment luring more and more foreign patients, India's medical technology sector is experiencing rapid expansion. Health insurance is expanding in India, and the medical equipment sector is a very appealing export market for American businesses.



Fig (ii)



Fig (iii)



Fig (iv)



Fig (v)

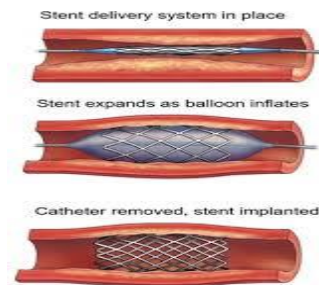


Fig (vi)

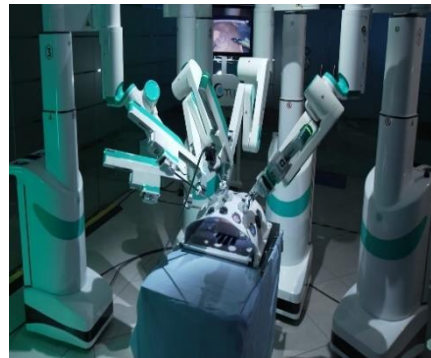


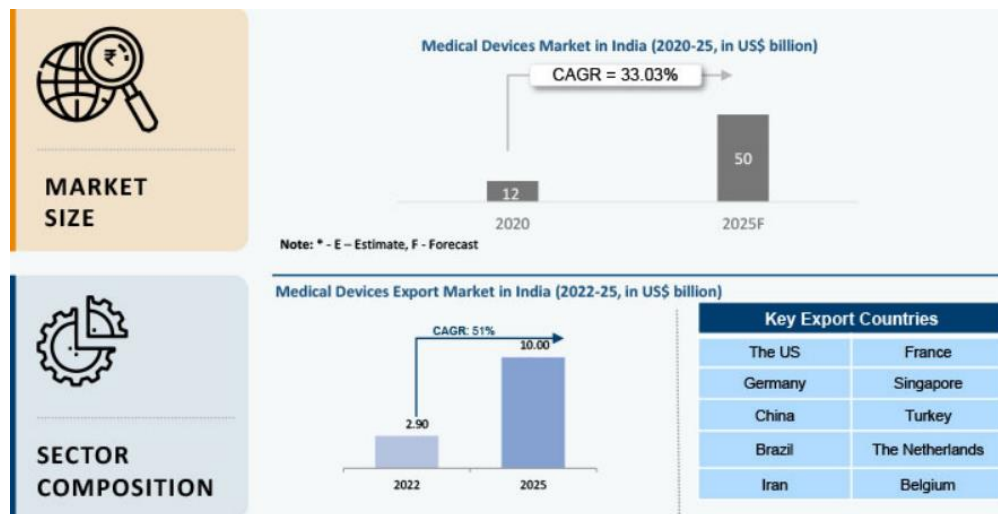
Fig (vii)

Here are a few of the major developments in India's medical technology sector:

- Focusing more on breakthroughs and start-ups: India has seen a rise in start-ups and creative businesses in the MedTech sector. These businesses are focused on creating innovative medical equipment by utilizing technology like AI/ML, the Internet of Things (IoT), and data analytics. The emerging startup ecosystem in India promotes innovation and helps market innovative products.
- Rising appetite for digital health solutions: India is seeing an increase in the market demand for digital health solutions. The growing accessibility of the internet and smartphones is what is

driving this. Digital health technologies can help make healthcare more accessible and of higher quality.

- Rising patient-centricity emphasis: The Indian MedTech sector is placing more and more emphasis on patient-centricity. The need to give patients individualized, high-quality care is what is driving this.
- Regulatory Environment: The Medical Devices Rules (MDR), Drugs and Cosmetics Act (DCA), 1940 and the Central Drugs Standard Control Organisation (CDSCO) are in charge of regulating medical devices in India. To guarantee the quality, well-being, and effectiveness of medical devices, a regulatory structure has been improved. The regulation process has been streamlined by the government and is now in accordance with global norms. There are several other laws that apply to medical devices in India in addition to the DCA and the MDR. These comprise the following: Drugs and Cosmetics Price Control Order of 2013, Clinical Trials Regulations, 2019 & 2020 Medical Devices (Amendment) Rules.
- Manufacturing Hub: India has become a center for the production of medical devices, drawing both domestic and foreign businesses. The Indian government's "Make in India" policy has promoted regional manufacturing, which has expanded the local manufacture of medical devices. To encourage production and innovation in the industry, GoI released 'Production-Linked Incentives (PLI) Scheme and a number of medical device parks in Telangana, Andhra Pradesh, Kerala, and Tamil Nadu have been built across the nation.



Source: IBEF

Fig (viii)

Factors driving India's MedTech market growth:

- Growing disposable incomes: Indians' increasing disposable incomes are driving up the desire for healthcare services. As more individuals can now afford medical equipment, this is also increasing demand for them.
- Rising Disease Burden and Ageing Population: Chronic diseases and lifestyle-related ailments are among the growing list of diseases that India is dealing with. The country also has a sizable elderly population. The need for medical equipment and technologies for the diagnosis, treatment, and management of numerous health disorders has expanded as a result of these causes.
- Rising healthcare awareness: Indians are becoming more conscious of healthcare issues. An expanding number of medical professionals, hospitals, and clinics, as well as the accessibility of knowledge regarding health through the internet and other media, are all contributing to this.

- Government initiatives and policies: The MedTech sector is receiving a number of supportive initiatives from the Indian government. Tax reductions, financial assistance, and simple capital access are some of these initiatives. The "Make in India" initiative promotes domestic medical equipment production, lowering reliance on imports. Also, initiatives such as Ayushman Bharat, which seeks to cover millions of people's healthcare costs, present chances for MedTech businesses.
- Favorable Regulatory Environment: India's medical device regulations have developed to encourage the expansion of the MedTech sector. Companies now find it simpler to get approvals and market innovative medical devices thanks to the adoption of the Medical Devices Rules plus initiatives to simplify the regulatory procedure.
- Growing Medical Tourism: Patients looking for low-cost, high-quality healthcare treatments travel to India, which has become a major medical tourism destination. As a result, there is now a demand for cutting-edge medical technologies, which has fueled the expansion of the MedTech sector.
- Growing Private Firm Participation: The development of India's MedTech industry has been significantly aided by the private sector. To improve patient care and draw medical tourists, private healthcare facilities, clinics, and healthcare organizations are investing in cutting-edge medical technologies.
- Collaboration and Partnerships: Indian MedTech businesses are aggressively partnering with foreign partners for technology transfer, shared research and development, and market growth. These partnerships have helped the sector expand and made access to cutting-edge medical technologies easier.

Factors challenging India's MedTech market growth:

- **Lack of Resources and Infrastructure:** The adoption and use of medical devices depend heavily on the availability of sufficient medical amenities including medical centers and trained healthcare personnel. The demand for and use of medical technologies is impacted by the lack of access to high-quality healthcare infrastructure in many sections of India, especially rural areas.
- **Limited sector Access:** There are many distinct parties in the enormous and fragmented Indian healthcare sector, each with its own procurement procedures and distribution systems. This may make it difficult for medical technologies to successfully enter the market and be adopted.
- **Protection of Intellectual Property Rights (IPRs):** Ensuring strong IPR protection is essential for promoting innovation in the MedTech sector. Concerns about IPR enforcement and the possibility of infringement in India have arisen, and these concerns could deter investment in R&D.
- **Skills & Talent Gap:** The development of a competent workforce capable of designing, producing, and operating medical devices is crucial for the sector's expansion. However, there is an acute lack of qualified personnel in specialties including clinical research, regulatory affairs, and biomedical engineering. Building a successful MedTech ecosystem requires tackling issues with brain drain and talent retention domestically.
- **Restricted Compensation Range:** Medical equipment may not be widely used if insurance companies, and government programs only partially reimburse their costs. Patients who want modern therapies

have limited access due to the absence of complete reimbursement policies for several medical devices.

- Price control & affordability: Medical equipment affordability is a major issue in India. Price control is another issue. Medical device pricing and profitability are impacted by price control strategies like price negotiations and price caps. Makers and medical professionals must strike a balance between affordability, innovation, and durability.
- Global Competitors: Whether in terms of technological innovation or market presence, the MedTech business in India faces fierce rivalry from international players. To compete internationally and meet the special requirements and difficulties associated with the Indian healthcare system, Indian businesses must innovate and set themselves apart.

Government's role in the MedTech sector:

The government's initiatives to assist the MedTech sector are paying off well. Here are a few of the specific actions the government has made to assist the medical technology sector:

- **PLI program (Production Linked Incentive)**: a government initiative that offers financial support to businesses that develop production facilities in India. 2020 saw the announcement of the PLI scheme for medical equipment, which is anticipated to draw over 10,000 crores (USD 1.3 billion) in investments.
- **PMJAY, or the Pradhan Mantri Jan Aushadhi Yojana**: a government-funded program that gives low-income patients access to free or discounted medications. The PMJAY has contributed to a rise in medical gadget demand in India.

- **Make in India initiative:** a government program with the objective of promoting manufacturing in India. International funding in the MedTech field has increased as a result of the Make in India push.
- **Digital India initiative:** aim of this initiative is to make India an economy and society based on knowledge. Access to medical equipment in India has been made easier thanks to the Digital India project.
- **Regulatory Harmonization:** To ensure global harmonization and facilitate market access for manufacturers, the Indian regulatory authorities are working to align the Indian regulatory framework with global standards and guidelines, such as the International Medical Device Regulators Forum (IMDRF) regulations and ISO standards.

Several renowned **MedTech firms in India** have made major improvements to the healthcare sector. Here are a few of these companies:

- **Siemens Healthineers:** division of Siemens AG, offers a wide range of medical gadgets, imaging equipment, laboratory tests, and healthcare information technology solutions.
- **Cardinal Health India:** division of Cardinal Health, a US-based healthcare company deals with medical equipment, pharmaceuticals, and medical supplies.
- **Philips Healthcare:** division of Royal Philips, provides a wide variety of goods and services in India, including imaging equipment, patient monitoring systems, healthcare informatics, and home medical solutions.
- **Ethicon India:** division of Johnson & Johnson, produces a variety of surgical products, including sutures, needles, and surgical equipment.

- **Wipro GE Healthcare:** an alliance between General Electric (GE) and Indian global firm Wipro Limited. It provides an extensive selection of medical equipment and services, such as imaging systems, diagnostic tools, healthcare IT solutions, and patient monitoring devices.
- **Sujana Surgicals:** Leading stent, catheter, and various other medical equipment producers in India.
- **Medtronic:** a global medical technology firm with operations in India that provides a variety of medical equipment and treatments. Medtronic has expertise in surgical technologies, neurological problems, diabetic control, and cardiac and vascular health.
- **Hindustan Syringes & Medical Devices:** One of India's top producers of syringes, needles, and other medical equipment.
- **Abott India:** division of Abbott Laboratories focuses on include heart disease, care for diabetes, diagnostics, nutrition, and medical equipment.
- **Aesculap India:** a division of German medical device firm B. Braun Melsungen AG, produces a wide variety of medical products, including equipment, implants, and surgical tools.
- **Stryker:** a top-tier provider of orthopedic implants, surgical tools, and medical gadgets for use in a range of medical disciplines, such as neurosurgery, spinal surgery, and trauma treatment.
- **Narang Medical:** Produces a variety of medical devices, such as pacemakers, catheters, and stents.
- **Biocon:** biopharmaceutical company has expanded into the MedTech industry. It provides a variety of medical products and services, especially in the area of diabetes care. Products from Biocon for managing diabetes include insulin delivery systems and diagnostic equipment.

Impact of MedTech on Medical Tourism:

The medical tourism market in India has grown significantly as a result of the medical technology (MedTech) sector. Medical tourists now find India to be a more alluring destination thanks to MedTech's contribution to raising the standard of treatment offered in Indian healthcare facilities.

Additionally, MedTech has assisted in lowering the price of healthcare in India, making it more feasible for medical tourists to have treatment there.

- Patients from all around the world have been drawn to MedTech advancements in fields including cardiac care, orthopedics, oncology, reproductive therapies, and cosmetic surgery. Medical tourists can get high-quality healthcare for just a percentage of the expenses that they would spend in their nations because of advanced medical technology, cutting-edge surgical procedures, and cutting-edge therapies offered at competitive prices.
- Medical tourism benefits from minimally invasive treatments, which have been made possible by MedTech developments. These techniques have fewer postoperative problems, smaller incisions, less trauma, and quicker recovery durations. Medical tourists looking for less intrusive treatment alternatives have been drawn to minimally invasive operations thanks to MedTech breakthroughs like laparoscopic and robotic surgery devices.
- The way patients are treated in Indian hospitals and clinics has been aided by medical technology. Patients, healthcare providers, and MedTech companies can communicate and share information easily thanks to electronic health records, telemedicine, and digital health platforms. The ease and affordability of healthcare facilities for medical tourists are improved by this enhanced patient experience.
- Healthcare personnel are now more equipped to stay aware of new technology developments thanks to training efforts, workshops, and knowledge-sharing programs backed by MedTech businesses.

Healthcare professionals from across the globe can now collaborate and share knowledge thanks to India's MedTech sector. The sharing of research findings, technological innovations, and best practices helps the medical tourism industry in India grow and build its reputation.

- The development of the MedTech sector in India has benefited the nation's economy. MedTech innovations, which are a driving force behind the medical tourism industry, produce income and job prospects. It promotes international partnerships, fosters foreign investment, and aids in the expansion of the healthcare sector as a whole. The expansion of amenities studies and breakthroughs in the MedTech industry is further fueled by this expanding economy, resulting in a cycle of ongoing development.

Covid-19 impact on Medical Tourism and MedTech industry in India:

Medical tourism and the MedTech sector in India have been significantly impacted by the COVID-19 outbreak. The pandemic led to serious disruptions in foreign travel and mobility limitations, which lowered medical tourism in India. This disruption hurt medical tourism and was estimated to be worth \$3 billion in India which includes people coming to India for treatment in the AYUSH sector and contemporary medicine.

The pandemic has caused many optional and non-urgent medical procedures—which are frequently requested by medical tourists—to be delayed or abandoned. There have been delays in scheduling elective procedures and treatments as medical centers and hospitals gave priority to COVID-19 patients and urgent situations. Patients were unwilling or unable to travel for non-essential procedures, which further hampered the market for medical tourism services.

The COVID-19 epidemic has caused serious problems for the medical tourism and MedTech sectors in India, but it also sped up the acceptance of digital health solutions and emphasized the significance of technological advances in healthcare delivery.

To guarantee continuity of care for patients, medical technology businesses and healthcare professionals in India adopted teleconsultations, remote monitoring, and digital health services. Since they allow for distant consultations and eliminate the need for in-person visits, the MedTech sector has seen a rise in demand for remote monitoring tools, telehealth platforms, and apps for healthcare. The MedTech industry now has new potential for innovation and expansion as a result of the shift towards digital health.

The epidemic has highlighted the necessity for a dynamic and resilient MedTech sector to handle upcoming healthcare concerns.

Recommendations:

- To effectively advertise and draw in a greater number of overseas patients, branding and marketing tactics should be strengthened & also a system for gathering patient feedback and assessing the standard of medical tourism patients' care should be established.
- Maintaining a balance between providing high-quality treatment for locals while also servicing international patients.
- The confidence and faith of medical tourists in India's healthcare system can be increased by streamlining certification procedures and assuring compliance with international norms.
- Medical tourism can be made more easily obtainable and financially feasible for patients by expanding insurance coverage specifically designed for medical tourists and cooperating with insurance companies to offer comprehensive policies.
- To share best practices, exchange knowledge, and draw in overseas patients, partnerships with international MedTech businesses, academic institutions, and healthcare organizations should be encouraged.
- Enhancing patient outcomes & satisfaction can be achieved by setting up systems for communication with the patient's primary healthcare providers & making sure the patient receives the right follow-up care.
- Transparent policies & rules regarding patient rights, high-quality standards, cost transparency, & medical visa procedures can assist build credibility & trust in the sector.
- Trust among foreign patients can be increased by ensuring appropriate accountability, open grievance redressal processes, & strict adherence to medical ethics.
- Gaining proficiency in a wider variety of cutting-edge medical procedures may help to draw in a more diversified patient population in need of specialized care.

Conclusion:

By enabling access to cutting-edge medical treatments, improving diagnostic capabilities, and delivering minimally invasive procedures, the MedTech sector has completely transformed healthcare in India. In addition to drawing medical tourists looking for high-quality, affordable healthcare, these developments have also helped India build its reputation as a location for specialized surgeries and treatments. Additionally, the MedTech sector has been essential in expediting healthcare delivery, enhancing the general patient experience, and guaranteeing compliance with global standards of excellence and security. Medical professionals in India have been able to take advantage of the newest MedTech developments because of collaborations, knowledge exchange, and ongoing skill development, which has improved the treatment outcomes for medical tourists.

In general, the MedTech sector has been a key factor in the expansion of medical tourism in India, drawing people from all over the world looking for cutting-edge medical treatments. Policymakers, business stakeholders, and healthcare professionals can use the recommendations made in this thesis as a road map for accelerating the development and long-term viability of the medical tourism industry. These recommendations include enhancing collaborations, enacting regulatory reforms, building infrastructure, and raising awareness.

India has the chance to establish itself as the world's market leader in medical tourism by providing state-of-the-art procedures, top-notch patient care, and affordable healthcare solutions. This is possible as India continues to realize the promise of the MedTech sector. India can deliver revolutionary healthcare experiences and advance patient well-being globally by utilizing the mutual benefits that exist among the MedTech industry and medical tourism.

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