

# Technology and Future of Healthcare

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**Abstract - Based on common communication protocols, technology is a global network of interconnected items that can each be addressed in a unique way. Through wireless networks, connected devices, and related IT companies that support data analytics for easing and improving the lives of patients and other stakeholders in general, information technology in healthcare enables timely and increased, almost instantaneous communication between physicians, hospitals, vendors, insurance companies, and other stakeholders. IoT-based healthcare services can help save lives in the event of accidents since it is crucial to inform hospitals during the "golden hour" about the location, type, and severity of the emergency and the patient's health. Newline Healthcare is an information-intensive sector, and to make daily decisions about a person's ongoing treatment, healthcare providers depend on having access to complete and accurate information at the point of care. IoT applied to healthcare (IoT healthcare) promises to bring about significant changes in the quality, safety, accountability, and even the mode of delivery of healthcare services. IoT has had a major impact on healthcare, despite being in its early phases of development. IoT newline devices give healthcare professionals greater accountability. The main goals of health care advocates, lawmakers, and newline insurance firms are to improve outcomes and down the skyrocketing costs.**

**This research work is to identify the potential opportunities and the present technical challenges for the application of innovative manufacturing methods in healthcare products. Advancements in the life sciences have created an atmosphere where engineering design and manufacture are not only necessary but also encouraged in order to find solutions to challenging biological issues. Healthcare is a crucial industry that is expanding more quickly in western countries. It differs from other, more conventional sectors in certain ways and poses obstacles for both the use of existing technology and the creation of new ones. Medical researchers are looking for innovative manufacturing techniques to make healthcare products such as prosthetic limbs, implants, personalized orthotic insoles, customized foot orthotics, and surgical planning models of internal body components quicker and more accurately. The present research methodology entails doing a thorough investigation of numerous healthcare issues and products before selecting a suitable one for study use. The purpose of this research is to discover the issues that people encounter throughout their lives and to thoroughly examine each issue. It is established that diabetes mellitus is a significant worldwide health burden and that the diabetic population experiences significant difficulties because of diabetic feet. The prevalence of foot disorders is growing at increased proportions in India and worldwide, mainly due to increase in the diabetic population and improper usage of foot wears.**

**Keyword - Healthcare, IoT healthcare, Healthcare products, and Implants**

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## INTRODUCTION

The healthcare industry has also seen significant change because of technology. Technology has had a significant impact on healthcare in India, changing how services are provided, accessed, and administered. India has seen notable advancements in patient care, disease management, medical research, and general healthcare infrastructure because of technological advancements. This essay will explore the various ways technology has influenced healthcare in India and the resulting benefits.

## Telemedicine and Remote Healthcare:

The development of telemedicine and remote healthcare services is one of the most prominent effects of technology on healthcare in India. Patients can communicate with doctors over the phone, video conference, or through mobile applications thanks to telemedicine. This has been notably helpful in India, a huge nation with limited access to healthcare facilities in rural and outlying locations. This gap has been filled by telemedicine, which allows patients to get medical guidance, diagnoses, and treatments without having to physically travel. It

has improved healthcare access, reduced waiting times, and provided timely interventions, particularly in emergencies.

### **Electronic Health Records (EHRs):**

Another notable technological achievement in India's healthcare industry is the digitization of medical records. Healthcare practitioners can easily access and share medical data thanks to the secure electronic storage of patient information provided by electronic health records (EHRs). EHRs have enhanced patient care coordination, streamlined healthcare procedures, and decreased medical errors. They improve the accuracy of diagnosis and treatment choices by giving medical providers a thorough understanding of a patient's medical history, prescriptions, allergies, and test findings.

### **Healthcare Mobile Applications:**

The widespread adoption of smartphones and mobile applications has had significant impacts on India's healthcare system. A wide range of services, including appointment scheduling, prescription reminders, symptom tracking, and health monitoring, are offered by many healthcare applications. These apps encourage preventive care, offer useful health information, and give people the power to take control of their health. Additionally, they make it easier for healthcare professionals to monitor patients with chronic diseases remotely and take immediate action when necessary.

### **Artificial Intelligence (AI) and Machine Learning (ML):**

Artificial Intelligence (AI) and Machine Learning (ML) technologies are transforming healthcare in India by enhancing diagnostics, treatment planning, and patient outcomes. Large amounts of medical data, including medical imaging, can be analyzed by AI algorithms to look for patterns, diagnose diseases, and more. Algorithms that use machine learning can examine patient data to forecast illness development, probable consequences, and suggest individualized treatment regimens. These innovations could lead to reduced errors, better medical decision-making, and better use of scarce healthcare resources.

### **Healthcare Robotics:**

The Indian healthcare system has also started to use robotic technologies. Robots are utilized in surgical procedures, especially in complex and minimally invasive surgeries where accuracy and precision are crucial. Surgeons can perform procedures with less trauma to patients, smaller incisions, and increased dexterity thanks to robotic surgery. Robots can also help with routine duties, patient monitoring, and drug administration, freeing up healthcare workers to focus on more important patient care duties.

## **REVIEW OF RELATED LITERATURE**

The review of related literature in research on the impact of technology on healthcare is a critical step in understanding the existing knowledge and research in this field. This chapter aims to provide a comprehensive overview of the relevant studies, articles, and scholarly works conducted by experts in the field.

The impact of technology on healthcare has been a topic of great interest and research in recent years. Many studies have examined various aspects of technology in healthcare, such as the use of electronic health records (EHRs), telemedicine, mobile health applications, artificial intelligence, and robotics.

### **Definition and Scope:**

Electronic health records, mobile health apps, remote patient monitoring, telemedicine, and health information technology are just a few of the fields that fall under the umbrella term "digital health." It strives to promote patient engagement, accessibility to healthcare, and process optimization.

### **Benefits of Digital Health:**

Numerous studies have highlighted several benefits of digital health. These include increased patient access to healthcare services, improved healthcare quality and efficiency, enhanced patient-provider communication, better disease management and preventive care, and cost savings.

### **Challenges and Considerations:**

The widespread use of digital health faces obstacles despite the positive effects. Some important factors that require attention are the digital divide (unequal access to technology), interoperability problems, constraints in the healthcare infrastructure, and privacy and security difficulties.

### **Future Directions:**

The widespread use of digital health faces obstacles even though its advantages seem promising. Some important factors that require attention are the digital divide (unequal access to technology), privacy and security concerns, interoperability problems, infrastructure limits in the healthcare sector, and interoperability challenges.

## **MATERIAL AND METHODS**

When studying the impact of technology on healthcare, researchers typically employ various materials and methods to gather data and analyze the findings. Here are some common approaches used:

### Literature Review:

To learn more about how technology is affecting healthcare, researchers examine the body of existing literature, which includes books, reports, and scholarly articles. They can fill in knowledge gaps and expand on earlier study thanks to this.

### Surveys and Questionnaires:

To gather information on the experiences, opinions, and perspectives of healthcare professionals, patients, or technology developers, researchers frequently distribute surveys or questionnaires to these groups. A variety of viewpoints can be captured with this technique.

### Interviews:

Researchers can acquire more detailed information and first-hand accounts on how technology has affected healthcare by interviewing important players such as administrators, healthcare providers, and technology experts. This technique reveals distinctive insights and difficulties encountered when putting technology solutions into practice.

### Observational Studies:

Observational studies in healthcare settings may be conducted by researchers to directly examine the usage of technology and its impact on many areas such as efficiency, quality of treatment, and patient outcomes. This method delivers real-time data and enables a more objective evaluation.

### Data Analysis:

Researchers examine current healthcare data sources such as electronic health records, patient databases, and health insurance claims to uncover trends and patterns in technology adoption and its impact on healthcare outcomes. This quantitative method aids in the provision of statistical evidence.

### Case Studies:

To fully understand the effects of technology on healthcare processes, expenditures, and patient experiences, researchers may perform in-depth case studies of a particular healthcare facilities or technology deployments.

### Ethnographic Research:

To do qualitative research, participants must spend a significant amount of time in healthcare settings. To comprehend the cultural, social, and organizational dynamics driven by technology, they monitor and engage with healthcare professionals, patients, and technology users.

### CONCLUSIONS

One of the most significant benefits of technology in healthcare is the ability to access and share medical information more efficiently. Electronic health records (EHRs) have replaced traditional paper-based systems, enabling healthcare providers to have instant access to a patient's medical history, medications, and test results. This streamlines communication among healthcare professionals, reduces medical errors, and ensures better coordination of care. Additionally, technology has greatly enhanced diagnostic capabilities. Modern imaging methods, including MRI and CT scans, make it possible to visualize the human body in greater accuracy and detail, which helps in the early diagnosis and treatment of disorders. Healthcare practitioners can now customize therapies to a patient's particular genetic profile thanks to genetic testing and customized medicine. Technology-enabled telemedicine has completely changed the way healthcare is provided, especially in isolated or underdeveloped locations. With the advent of virtual consultations, patients no longer need to travel, lowering accessibility obstacles. As virtual appointments have reduced the danger of virus transmission during the COVID-19 pandemic, this has shown to be especially helpful.

Smart medical devices and wearable technology have also been made possible by technology. These tools enable people to take control of their health and wellbeing, from insulin pumps for managing diabetes to smartwatches that track heart rate and sleep habits. They also give healthcare professionals useful information that enables preventative interventions and individualized treatment approaches. Although technology has unquestionably improved healthcare, there may still be issues that need to be addressed. To enable equal access to technology-driven healthcare solutions, privacy and security issues relating to patient data must be carefully addressed.

Overall, technology has revolutionized healthcare by improving access to medical information, enhancing diagnostic capabilities, enabling remote care, and empowering individuals to take charge of their health. It continues to drive innovation and holds tremendous potential for the future of healthcare.

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