



## **SYNOPSIS**

**Name: Ruchila Fating**

**Roll no: 0557**

**Stream: MBA Pharmaceutical Management**

**Batch: PM-15**

**Faculty Guide: Dr. Saurabh Kumar Banerjee Sir**

**Dissertation Topic:**

**"Exploring the Role of Artificial Intelligence in Addressing Healthcare Challenges: A Doctor-Centric Approach"**

### **Abstract**

This research explores how Artificial Intelligence (AI) can help doctors overcome the challenges they face in their daily practice and hospital settings. The aim is to identify specific issues faced by doctors and investigate AI tools that could improve workflow, diagnosis, and patient care. A survey was conducted with 74 doctors to gather insights, followed by interviews to understand their needs better. The research employs a quantitative methodology, and the expected outcome is to recommend AI tools that can help healthcare professionals improve their efficiency and patient outcomes.

### **Introduction**

Artificial Intelligence (AI) is increasingly being integrated into healthcare systems to improve processes and patient care. However, healthcare professionals, particularly doctors, still face significant challenges such as inefficiencies in hospital workflows, diagnostic accuracy, and patient management. Understanding these challenges and finding ways to alleviate them is crucial for improving healthcare delivery. This research seeks to bridge the gap between the difficulties doctors face and the potential solutions that AI tools can offer.

The research problem centers around identifying specific challenges faced by doctors and exploring how AI can be used to address them effectively.

### **Literature Review**

The healthcare industry is on the brink of a technological transformation with the rapid growth of artificial intelligence (AI). AI has the potential to revolutionize patient care, improve operational efficiency, and reduce costs significantly. However, its adoption is still in the early stages, with many

challenges ahead. While AI is increasingly used for diagnostics, patient management, and precision medicine, the healthcare sector struggles with issues like system interoperability, data privacy concerns, and the need for transparent AI models (Explainable AI). This study aims to explore AI's role in healthcare, focusing on its current applications, challenges, and future potential, especially in areas like predictive analytics, diagnostics, and personalized treatments.(1)

Artificial Intelligence (AI) is bringing big changes to healthcare by helping doctors and hospitals work faster and smarter. AI works by mimicking how humans think and make decisions, but it does so using advanced algorithms and learning from huge amounts of data. In healthcare, this means more accurate diagnoses, better treatment decisions, and faster discovery of new medicines. AI is already playing a big role in areas like radiology, cardiology, ophthalmology, and drug research. It helps healthcare professionals predict, monitor, and treat diseases more effectively — for example, by reading scans to detect cancer early, monitoring heart conditions, and spotting eye diseases like diabetic retinopathy. With smart devices and tools powered by AI, doctors can catch health problems earlier and improve patient care in a big way.

In cardiology, AI tools monitor heart health through wearables that track heart rate and detect issues like stroke risks or abnormal rhythms. In radiology, AI-powered machines help doctors read CT scans, MRIs, and X-rays to quickly find signs of cancer or lung diseases. Ophthalmology also benefits greatly, as AI systems can detect eye diseases like glaucoma and diabetic retinopathy through detailed image analysis. These technologies are becoming essential in daily medical practice because they help doctors make faster and more accurate decisions, while also allowing continuous patient monitoring. As AI continues to improve, it promises to make healthcare more precise, efficient, and accessible for everyone.(2)

## Objectives of the Study

The objectives of this study are:

- To identify the main challenges faced by doctors in their daily practice and hospital settings.
- To explore AI tools that could help doctors address these challenges.
- To recommend practical AI applications that could improve workflow, diagnosis, and patient care.

## Hypothesis:

AI tools can significantly improve the efficiency and effectiveness of healthcare delivery by addressing doctors' key challenges.

## Methodology

This study uses a **quantitative and qualitative research design** to gather and analyze data. The research involved two primary methods:

1. **Questionnaires:** A structured survey was created and distributed to 74 doctors to identify common challenges they face.
2. **Interviews:** Follow-up interviews were conducted with some of the doctors to gain deeper insights into their challenges and how AI could help.

## Data

The questionnaires focused on key areas such as diagnosis, patient management, and workflow

## Collection:

challenges. The interviews provided qualitative insights into these challenges and explored doctors' thoughts on AI applications.

### **Data**

Data collected from the questionnaires were analyzed quantitatively to identify trends and patterns. Qualitative data from interviews were used to complement the survey findings.

### **Analysis:**

### **Ethical**

The study adhered to ethical standards by ensuring confidentiality of participants, obtaining informed consent, and maintaining transparency throughout the research process.

### **Considerations:**

### **Expected Outcomes**

The expected outcome of this research is to identify specific AI tools that can help doctors overcome their challenges, particularly in patient management, medical administration, diagnosis, medication adherence, reminders and knowledge gathering. The findings will highlight the importance of AI in healthcare and suggest practical solutions for implementing AI tools in everyday medical practice. The implications of the study may lead to improved efficiency, better patient care, and more informed decision-making in healthcare settings

### **References**

1. Samajdar, Shambo Samrat; Chatterjee, Rupak<sup>1</sup>; Mukherjee, Shatavisa<sup>2</sup>; Dey, Amit<sup>3</sup>; Saboo, Bharat<sup>4</sup>; Pal, Jyotirmoy<sup>5</sup>; Joshi, Shashank<sup>6</sup>; Chatterjee, Nandini<sup>7</sup>. Artificial Intelligence in Healthcare: Current Trends and Future Directions. Current Medical Issues 23(1):p 53-60, Jan–Mar 2025. | DOI: 10.4103/cmi.cmi\_93\_24
2. Shahwar Anwar S, Ahmad U, Muazzam Khan M, Faheem Haider Md, Akhtar J. Artificial Intelligence in Healthcare: An Overview [Internet]. Smart Drug Delivery. IntechOpen; 2022. Available from: <http://dx.doi.org/10.5772/intechopen.102768>

### **Appendice:**

Questionnaire used for the survey

## Section 1: General Information

1. Name \_\_\_\_\_
2. Specialty:
  - ☐ MBBS
  - ☐ MD
  - ☐ DM
  - ☐ DNB
  - ☐ MS
  - ☐ MCH
  - ☐ OTHER
3. Years of experience:
  - ☐ 0-5 years
  - ☐ 6-10 years
  - ☐ 11-20 years
  - ☐ 20+ years
4. How familiar are you with AI applications in healthcare?
  - ☐ Very familiar – I use AI tools regularly
  - ☐ Somewhat familiar – I have basic knowledge
  - ☐ Not very familiar – I have heard about it but don't use it
  - ☐ Not familiar at all
5. What are the biggest challenges you face in your daily medical practice? (Select all that apply)
  - ☐ Time constraints in patient consultations.
  - ☐ Managing large volumes of patient data
  - ☐ Administrative burden and paperwork
  - ☐ Diagnosing complex cases accurately
  - ☐ Patient non-compliance with treatment
  - ☐ Other (please specify) \_\_\_\_\_
6. Have you used any AI-based tools in your medical practice?
  - ☐ Yes
  - ☐ No
  - ☐ Not sure
7. If yes, which AI applications have you used? (OPEN ENDED QUESTION)

8. For what purpose have you used AI based applications?

- Diagnostic
- Treatment planning
- Patient management and follow up
- Administrative tasks
- Content generation ( ppt making)
- Knowledge gathering
- Other

9. What type of AI training or support would you find most beneficial?

- Workshops and hands-on training
- Online courses and webinars
- Access to AI-powered decision support tools
- Other (please specify) \_\_\_\_\_

10. What recommendations do you have for improving AI adoption in healthcare?  
(OPEN ENDED QUESTION)