INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY
IJARIIT
ISSN: 2454-132X
Impact Factor: 6.078
(Volume 11, Issue 5 - V11I5-1198)
Available online at: https://www.ijariit.com

AI in Healthcare- A Global Perspective

Rishaan Sanjay Lulla
lullarishaan@gmail.com
Bombay Scottish School, Maharashtra

ABSTRACT

Despite their initial seeming incompatibility, research shows that AI and conventional medicine may work effectively together. 'Mapping the use of artificial intelligence in traditional medicine' is a new brief from the World Health Organization (WHO) and its partners that demonstrates how AI may support TCIM (traditional, complementary, and integrative medicine) while preserving cultural heritage. By raising the standard of patient care, artificial intelligence (AI) is predicted to enhance long-term health outcomes. AI makes it possible for extremely accurate diagnoses, individualized treatment plans, quicker recovery times, and fewer problems by rapidly and correctly analyzing patient data. In addition to helping patients, these advancements lower the expenses associated with incorrect diagnoses and inefficient therapies. AI is useful in public health management. It can alleviate the strain on healthcare systems by forecasting health trends and enhancing outcomes for entire populations. By providing more individualized and affordable services, increasing patient alternatives, and promoting better treatment, AI strengthens competition.

Keywords: *AI (Artificial Intelligence), Data Scientists, Healthcare, Data Privacy, Ethics, Digital Tools, Virtual Patients, Economic Implications, Personalization, Route Optimization, Automation, Chatbot, Cybersecurity, Predictive Maintenance, Data Analytics, Machine Learning, Preventive Care, Transformer, Neural Networks, Autonomous.*

OBJECTIVES

The objectives of this paper are as under-.

i. To get an overview of the global healthcare system.
ii. To study in detail artificial intelligence.
iii. To analyse the functioning of artificial intelligence in health care.
iv. To get an insight into the functioning of the Indian healthcare system.

INTRODUCTION

A complex network of individuals, organizations, and resources that collaborate to provide services that maintain, improve, or promote population health is known as a health care system. From public health programs and preventative care to the treatment of illnesses and accidents, it encompasses a wide range of stakeholders, including governments, insurance companies, healthcare practitioners, and the general public.

In the 19th and 20th centuries, industrialization accelerated in the majority of other areas. The management of health and the delivery of healthcare services have mostly withstood the changes that have occurred over the past 200 years. The pay-for-activity revenue model, an opaque market with barriers between buyers and sellers, a high level of regulation, and a subscale regional delivery structure are some of the well-known causes of the lack of progress.

Since the 21st Century, healthcare systems around the world have experienced significant reforms. Even while conventional hospitals still exist globally, internet services have frequently taken their place, bringing physicians into the digital age and streamlining the therapeutic procedure. The healthcare industry is undergoing a fundamental upheaval due to the growing incorporation of new technology. Advances in big data analytics, machine learning, and artificial intelligence (AI) have revolutionized patient diagnosis, care, and treatment.

The evolution of artificial intelligence

When American science fiction author Isaac Asimov released his short tale "Runaround" in 1942, the first indications of artificial intelligence were revealed. In the story, two engineers named Gregory Powell and Mike Donovan created a robot that abides by three fundamental rules: (1) it cannot harm a human or allow a human to be harmed by anything it does; (2) it must obey human commands unless they violate the first rule; and (3) it must defend itself unless it violates the first or second rule.

Ever since early symbolic, rule-based systems to contemporary machine learning and deep learning, artificial intelligence (AI) has advanced via significant turning points such as the Dartmouth Conference (1956) and advances in neural networks and algorithms. Before a significant change occurred in the 1990s due to the availability of huge data, the field went through phases of enthusiasm and stagnation (also known as "AI winters"), which fueled advances in machine learning and deep learning that resulted in the current autonomous AI agents. Large-scale neural networks, such as OpenAI's Generative Pre-trained Transformer (GPT) series, and the advancement of deep learning techniques are significantly responsible for the current boom of AI. With 175 billion parameters and previously unheard-of natural language interpretation and generating skills, GPT-3, which was published in 2020, is a shining illustration of how AI has advanced.

As of today, ChatGPT 4 can answer close to any question relating to its birth and provides information on a level that humans would not have been able to perceive half a century ago. The level of artificial intelligence is so advanced that the intelligence not only answers theoretical questions, but also answers questions with an EQ of its own.

AI is a crucial ally in this age of digital acceleration, providing specialized use cases in a wide range of important businesses. AI's revolutionary effects are changing conventional paradigms in a variety of industries, including manufacturing, retail, healthcare, and finance. Businesses use AI to improve resource efficiency, simplify processes, and obtain insights into customer behavior and market trends by utilizing machine learning algorithms, predictive analytics, and sophisticated automation.

Development of the healthcare system

The original purpose of hospitals was to provide charitable aid to the underprivileged. They didn't provide much more than what a doctor could perform in a patient's house, except for performing a few procedures. During their training in busy hospitals, medical students mostly learned how to analyze symptoms and determine the cause of an illness. The available therapies were limited. The majority of experts earn their living by visiting patients at their homes or in private offices. They brought students and younger physicians to the hospital only once or twice a week to check on patients. They gave their time for free, and in return, they gained respect, new patients, and the honor of working at a teaching hospital. Since the late 1940s, healthcare has progressed a lot. Surgical options also grew, both invasive and noninvasive.

Hospitals today have a system and are more commercial. It should come as no surprise that many hospital fatalities and major problems may be avoided. Hours before a crisis, patients frequently exhibit obvious symptoms of deterioration, such as changes in vital signs. In as many as 90% of hospital cardiac arrests, a slow but recoverable deterioration occurs first. This same delayed pattern is frequently seen in ICU transfers from standard wards as well. In the community, an ambulance would be called in response to a sick patient. However, in hospitals, the answer is frequently unclear and disorganized. Nurses see warning indicators, but subordinate staff members relay the information based on their comprehension of the circumstances. Nurses in non-teaching hospitals get in touch with the patient's usual physician, who might not be there. They may summon another physician or a specialist, such as an intensivist, if they are unable to attend. By integrating artificial intelligence into the healthcare system, this issue may be resolved in a very straightforward manner.

The growth of the use of ai in the healthcare industry

Despite significant advancements in the medical industry, illness diagnosis remains a significant worldwide concern. Because illnesses can have a wide range of causes and symptoms, developing techniques for early detection is still challenging. Artificial intelligence (AI) has the potential to significantly impact this field. A subfield of artificial intelligence called machine learning utilizes data to identify trends and make judgments. The quantity and caliber of the data are critical to its success. It can assist in resolving some of the difficulties associated with medical diagnosis.

Doctors may benefit from machine learning by using technology to improve efficiency, automate chores, and make better decisions—all while saving money. It makes use of cutting-edge techniques like data mining and convolutional neural networks to identify patterns in vast volumes of data, which is particularly helpful in identifying illness symptoms. AI techniques may be used to forecast and categorize illnesses in addition to diagnosing them. AI in diagnosis is still in its infancy, nevertheless.

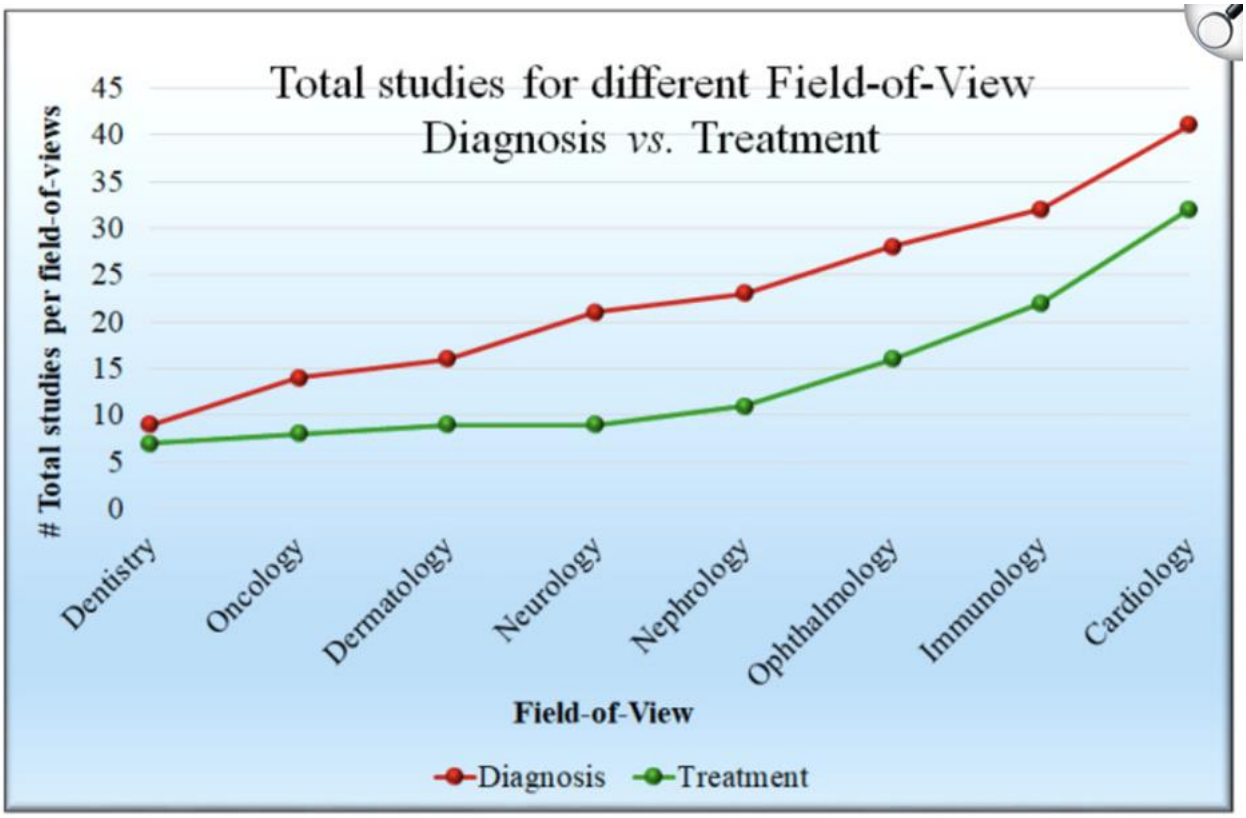
As more data becomes available, AI is being used more in areas like cancer detection. For example, in the UK, a study used a large dataset of mammograms and fed it into an AI system to detect breast cancer. The results showed a drop in false positives by 5.7% and false negatives by 9.4%. In South Korea, another study found that AI detected breast cancer with 90% accuracy, while human radiologists had 78% accuracy. This showed a 17% improvement in early detection thanks to AI. AI is also being used to study medical images and blood samples, including for infections like COVID-19. These tools can increase accuracy, reduce costs, and save time compared to traditional diagnostic methods. They also lower the chances of human error. In the future, AI could support doctors by giving real-time help and suggestions during patient exams.

Researchers are now developing methods to use AI for diagnosis and therapy. In order to identify problems like fractures, cancers, and other disorders, AI may analyze pictures from CT scans, MRIs, and X-rays. It gives quick and precise data, enabling physicians to treat patients more successfully. AI is enhancing clinical lab tests, which are essential to healthcare, by increasing their speed and accuracy. AI has enormous potential in microbiology as well. In order to detect, identify, and even quantify microorganisms and illnesses, machine learning techniques have been developed. Additionally, these technologies are able to forecast patient outcomes. They make use of information like lab sample findings and gene sequencing data. Automation and artificial intelligence (AI) have made lab labor more efficient in recent years, particularly in fields like genetic testing and blood cultures. Doctors may now identify the best antibiotics more rapidly thanks to laboratories that can produce findings in 24 to 48 hours. AI solutions can direct patient care, evaluate symptoms, and manage hospital workflow.

Advantages of ai in healthcare

There are eight key long-term economic effects of using artificial intelligence (AI) in healthcare, including cost savings, cost avoidance, better long-term health outcomes, innovation, research, external economic factors, and strategic changes. Each of these areas has smaller sub-categories as well. AI in healthcare is expected to bring major financial benefits to both hospitals and patients. With more efficient operations, treatments, and diagnoses, significant savings are likely. These savings will help healthcare providers and patients and could lead to a large return over time, improving healthcare systems globally. One study on treatments for metastatic colorectal cancer showed that using AI along with a specific testing panel saved $400 million, or about 12.9%, compared to using next-generation sequencing alone. Projections suggest AI could save the U.S. healthcare system between $200 billion and $360 billion annually. These savings come from reduced costs and improved patient care. AI personalises treatment, which could cut hospital stays by 25% and reduce nursing facility discharges by 91%. This means patients recover faster, hospitals operate more efficiently, and overall costs drop. Preventive care using AI helps detect diseases early and allows quick action, lowering hospital admissions and expensive treatments. This could also lead to lower death rates as diseases are caught and treated earlier.

For example, using advanced technology for the early detection of Parkinson’s disease improves patients' quality of life and reduces treatment costs. However, there are some limitations to using AI, such as bias, small data samples, and a focus on short-term results while ignoring long-term impacts. Also, different countries may have different results, making it hard to generalize.



Diagnosis Accuracy

AI helps avoid costs by reducing the financial burden on healthcare providers and insurance companies. It cuts unnecessary spending and legal costs by improving accuracy and reducing mistakes. AI tools like Google DeepMind are highly accurate in diagnosing diseases, which helps avoid malpractice cases. Another benefit is reducing waste by optimizing how resources are used and limiting unnecessary tests and procedures.

In these ways, AI reduces pressure on hospitals, insurance providers, and patients, helping healthcare systems become more efficient, compliant, and cost-effective. It plays a valuable role in managing modern healthcare expenses.

Disadvantages of ai in healthcare

Even though AI has a lot to offer the healthcare industry, there are certain obstacles and possible negative effects. The potential for algorithmic bias to result in uneven treatment, high implementation costs, and privacy and security issues from sensitive data are some of the drawbacks of AI in healthcare. A lack of empathy and a "human touch" are further disadvantages, as is the possibility of misdiagnosis and difficulties with accountability and policy. Additionally, relying too much on AI may reduce critical thinking abilities and ignore social factors like socioeconomic class.

AI systems can carry out activities that were previously completed by people, which might result in job losses in some industries. Addressing the potential for AI to aggravate economic inequities by concentrating wealth and opportunity in the hands of a few.

Possible disadvantages are hazards to data security and privacy due to the production of large volumes of private patient information. Fairness and bias issues in training data might result in some demographic groups being misdiagnosed, underdiagnosed, or treated unfairly. New legal and regulatory issues require negotiating intricate regulatory structures. Problems with interoperability between new data platforms and current healthcare systems. Identifying what or who is accountable in the case of an error is a question of accountability and reliability.

Among the difficulties is a lack of confidence in AI-generated suggestions is the main reason for the public's and healthcare professionals' resistance to adoption, and high implementation and development expenditures. Potential over-reliance on suggestions made by AI might impair medical personnel's judgment and critical thinking. AI-generated judgments that could go against patient or family desires raise ethical questions. Problems with data quality resulting from erroneous or incomplete data and possible threats to cybersecurity include ransomware, malware, privacy violations, and data breaches.

Ethics of using artificial intelligence in healthcare

AI has transformed areas like medical imaging, electronic health records, lab diagnosis, treatment, drug discovery, and personalized medicine. It helps doctors work smarter, speeds up processes, and improves data storage and access. However, AI also faces ethical and legal issues. Many low-income and developing countries still lack access to these technologies. There are concerns about privacy, informed consent, social inequality, and the loss of human empathy in medical care. Because of this, healthcare professionals must carefully consider medical ethics, autonomy, beneficence, nonmaleficence, and justice before fully adopting AI in medicine.

The General Data Protection Regulation (GDPR) was created by the European Union (EU) and has influenced privacy laws in other countries, such as the US and Canada. These rules require that personal data and activities of foreign companies are handled by EU-based organizations to ensure strong protection of individuals' information. In the US, the Genetic Information Non-discrimination Act (GINA) stops employers from making unfair decisions based on a person's genetic health data. AI in healthcare helps by analyzing health data and medical images, improving diagnosis and treatment, and speeding up medical research.

Indian scenario

India's large population puts pressure on its healthcare system, but Artificial Intelligence offers hope. AI can detect diseases like cancer and tuberculosis early by analyzing health data, helping doctors treat patients sooner and better. It can also study health trends in big groups, predict outbreaks, and help prevent them. AI creates personalized treatment plans, improving care and reducing side effects. However, challenges like data privacy, weak infrastructure, and bias in algorithms must be solved. With strong tech support and smart planning, India can use AI to make healthcare more accurate, affordable, and accessible for millions of people. Another major advantage of AI is its ability to create personalized treatment plans. By studying a person's medical history, genes, lifestyle, and past treatments, AI can suggest the best treatment for that individual. This improves results and reduces side effects. AI is also used to improve the way hospitals operate by automating tasks like scheduling, managing records, and tracking resources. Telemedicine services powered by AI are helping bring expert medical advice to people in remote areas.

Also, AI plays a big role in drug research, helping scientists develop new medicines faster by predicting how different compounds will react in the body. AI also supports public health by using real-time data to guide health policies and disease prevention strategies. Voice assistants and chatbots are being used to answer health questions, send medicine reminders, and even support mental health. Despite these benefits, there are still several challenges in using AI widely in India's healthcare. First, many hospitals don't have the necessary technology to support AI. Second, medical data in India is often unorganized, making it hard for AI to work effectively. Data privacy is also a big concern, and proper rules are needed to protect patient information. AI tools also need to be affordable and easy to use so that doctors and nurses are not afraid of losing their jobs or facing extra work. Training healthcare workers to use AI properly is also important. To make the best use of AI, India needs a strong plan. This includes building better technology in hospitals, improving data systems, protecting patient privacy, and educating both the public and healthcare professionals about AI. Partnerships between the government, private companies, and universities can speed up research and bring useful tools into real hospitals. International collaborations can also help share knowledge and set global standards.

REVIEW OF LITERATURE

1) "Implementing and governing artificial intelligence in medicine"-Davy Van de Sande, Michel E van Genderen, Jim Smit, Joost Huiskens, Jacob Visser, Robert E. R. Veen, Edwin van Unen, Oliver Hilgers BA, Diederik Gommers, Jasper van Bommel, BMJ Health and Care Informatics- February 2022. Journal No.- 10.1136/bmjhci-2021-100495. This review was done by a team of doctors, tech experts, data scientists, and regulation specialists. It brings together important rules, challenges, and good practices for developing medical AI. The review also gives a clear step-by-step guide to help build and safely use AI in real hospitals and clinics. Teams should follow legal rules and share their work openly. Still, there are important questions that need answers, like: How accurate should AI be? Can it stay reliable over time? Who is responsible if it fails? And how long should its data be saved for future checks?

2) "The long-term economic impact of AI in healthcare", Ahmad Z. Al Meslamani - Journal of Medical Economics, October 2023- Journal No. 2285186. AI can help lower healthcare costs by making diagnoses more accurate and using resources more efficiently. It also improves patient care by offering treatments tailored to each person. This article explored how AI could lead to major cost savings. However, differences in rules and healthcare systems around the world can make it harder to fully use AI and get these benefits. AI's impact also goes beyond healthcare; it affects markets and economies as well. Because of this, we need to study its effects more closely. A deeper look will help healthcare leaders and investors make better choices and understand both the opportunities and challenges of using AI in healthcare.

3) "AI in Indian healthcare"-Sushanta Kumar Das, Ramesh Kumari Dasgupta, Saumendu Deb Roy, Dibyendu Shil- Mata Gujri College of Pharmacy, February 2024- Journal No.10.1016/j.ipha. To fully use AI for better diagnosis and early disease detection, we need clear rules for data privacy, ethics, and standards. It's also important for all key players—doctors, tech experts, and policymakers—to work together. Developing AI tools suited to local needs, fixing regulatory issues, and training healthcare workers will help bring AI into everyday medical practice. By overcoming these challenges, AI can greatly improve patient care and boost medical progress, especially in India's healthcare system.

4) **"Ethical Issues of Artificial Intelligence in Medicine and Healthcare"- Dariush D Farhud, Shaghayegh Zokaei- Iran J Public Health, November 2021- Journal No. 10.18502/ijph.v50i11.7600** The fast growth of AI in medicine is seen as a helpful tool to support healthcare professionals. However, along with its progress, AI also brings new challenges related to medical ethics. If not handled carefully, its risks could be greater than its benefits. To avoid this, experts must make sure that ethical values and human concerns are always considered when using AI in healthcare.

5**) "Artificial intelligence in healthcare: transforming the practice of medicine"-Junaid Bajwa, Usman Munir, Aditya Nori, Bryan Williams- Future Health, July 2021- Journal No. 10.7861:** AI has the power to completely change healthcare by making it more personalized, accurate, and accessible. While it's unclear whether this shift will happen slowly or suddenly, health systems need to prepare for big changes. In the future, AI could help provide high-quality care to people everywhere, helping to reduce health inequalities across the world. Over the next decade, the focus will shift from simply digitizing records to using that data to improve health outcomes through AI. To make this possible, we need more research, better training for healthcare workers, and strong leadership that understands digital tools.

6) **"The downsides of artificial intelligence in healthcare"-Dalmacito Cordero Jr- December 2023- Journal No. 10.3344/kjp.23312:** AI has already made many helpful contributions to healthcare, but it cannot replace humans. Doctors create AI and must remember that their patients are vulnerable people who need care, understanding, and empathy—something machines cannot truly provide. A strong human connection between doctor and patient is essential and cannot be replaced by technology. To give the best care, AI and humans should work together as partners, supporting each other rather than replacing one another, to improve healthcare for everyone.

7) **"Artificial intelligence in healthcare"- Manas Dave & Neil Patel -British Dental Journal- January 2025- Journal No. 10.47392/IRJAEM.2025.0010:** Using Artificial Intelligence (AI) in medical and dental education could greatly improve how future healthcare professionals are trained. AI tools like virtual patients and automated exam questions offer new and exciting ways to learn. However, to safely and effectively use AI, we need strong research and clear rules. A major challenge is getting high-quality, ethical data to train these AI systems, as healthcare data is sensitive and private.

By working closely with doctors, data experts, and regulators, we can ensure the data is used properly. With the right approach, AI can make healthcare education better, faster, and more effective.

8) **"The Economic Value and Clinical Impact of Artificial Intelligence in Healthcare"- Weiqi Jiao, Xuan Zhang, Fabian D'Souza- IEEE October 2023- Journal No.10297311:** This review looks at what current research says about how AI affects healthcare costs and patient care. AI has the power to help healthcare work faster and more completely than humans and can help people make better decisions. This might improve health at many levels. But there aren't enough strong studies that show how much money AI can save or how well it works in real life. There are also concerns about fairness, privacy, and ethics. Even though using new technology is tricky, AI could be very helpful if we use it carefully, with teamwork, good research, and by keeping patients' needs in mind.

9) "The Potential Impact of Artificial Intelligence on Health Care Spending"- Nikhil R. Sahni, George Stein, Rodney Zemmel, David Cutler- National Bureau of Economic Research January 2023- Journal No.978-0-226-83311-8 Artificial Intelligence (AI) has long been discussed in healthcare, but its full potential hasn't been realized. Current technologies could save the industry $200–$360 billion annually within five years, without reducing care quality or access. AI can also improve care, expand access, and boost satisfaction for both patients and clinicians. More healthcare providers are now piloting AI, helping to identify both barriers and solutions. To unlock its full benefits, AI must be used across many areas, supported by real-world examples and ongoing research. A shared database of AI successes and failures could speed up progress. If adopted widely, AI could deliver major cost savings and better care, turning potential into real-world impact in the coming years.

10) "**The long-term economic impact of AI in healthcare"- Ahmad Z. Al Meslamani Journal of Medical Economics, October 2023 - Journal No.2285186:** AI can help reduce healthcare costs by improving how diseases are diagnosed and how resources are used. It also makes care better by creating personalized treatment plans. This article looked at how much money AI could help save. However, differences in healthcare systems and government rules in different countries may slow down the use of AI and the benefits it brings. AI is also transforming the entire healthcare industry and may have broader economic implications. Because of this, we need to study AI's impact more deeply. A better understanding will help doctors, hospitals, and investors make smart decisions and plan for the future in an AI-powered healthcare system.

RESEARCH METHODOLOGY

Research is the process of gathering knowledge on a certain subject, often in a methodical and structured manner. It resembles an expert technique for learning new information. Some definitions state that research entails a thorough and deliberate inquiry. The term "methodology" describes how we investigate and use research techniques in any field. It comprises the many procedures, methods, and instruments—both descriptive and numerical—that direct the conduct of research. Research methodology helps us comprehend the methodologies, their advantages and disadvantages, and their overall influence on knowledge by explaining not only the findings but the entire process.

Types of Research Methodology

Descriptive:

This kind of research has a direct connection to accounting, as the name implies. It entails gathering many types of data, including through fact-finding techniques and surveys. One important aspect is that the variables are not under the researcher's control. Rather, they only explain what is happening now or what has previously occurred. This descriptive method is used in the majority of research that examines historical events.

Exploratory:

Because the primary objective of exploratory research is to better understand a topic rather than test a particular hypothesis, a clear hypothesis is not always required. Nonetheless, developing a fundamental concept or speculative hypothesis might still aid in directing the study's course. A flexible research design is crucial because it enables the researcher to examine the issue from several perspectives and modify the strategy in response to fresh information. This type of design makes it possible to efficiently collect important data without squandering time or money. The emphasis when choosing a sample is less on rigorous procedures and more on picking sources that can offer insightful information about the topic under investigation.

Qualitative:

As the name suggests, the goal of this kind of study is to gain a more thorough and intimate knowledge of things. During observation, it is used to examine things like body language, attitudes, ideas, and feelings. It frequently deals with human behavior. This approach is particularly helpful for interviewers and psychologists. Word association, phrase completion, picture-based exercises, and the Thematic Apperception Test are among the often-employed strategies. It is sometimes referred to as motivation research since it is most useful when data and statistics don't provide definitive answers.

Quantitative:

The primary focus of this kind of research is on numerical measurements. Comparing qualitative and quantitative approaches is a common practice. A census, which gathers information on the population, society, and economy of a particular region, is a typical illustration of quantitative research. Statistical methods are then used to analyze this data. It mostly uses primary data collected via questionnaires and surveys. However, it's crucial to remember that qualitative and quantitative approaches may complement and be related to one another.

Statistical tools adopted

The collected data was processed, analysed, and presented using graphical representations.

Sampling Technique

This research paper used a questionnaire consisting of basic questions about artificial intelligence in healthcare.

Hypothesis

The hypothesis proposed here is as mentioned below.

H0-Artificial Intelligence has not helped the healthcare industry grow.

H1-Artificial Intelligence has aided the healthcare industry and led to its growth.

Data types and sources

Nowadays, practically everything we do is guided by information. Data is essential to moving forward and making wise judgments, whether we are operating a business, enhancing healthcare, resolving scientific issues, or making decisions for the government. Knowing the source of your data is crucial while conducting research. You may conduct a robust and significant study with the aid of reliable data sources. So that you may gather and analyze data with confidence, we'll break down the primary categories of data sources, define them, and provide examples in this blog.

Primary Data

Original information gathered directly by researchers for a particular study is known as a primary data source. Surveys, interviews, experiments, focus groups, and observations are some examples of these techniques. Such information is new, pertinent, and specific to the objectives of the study. Researchers have more control over the data collection process and may make sure it meets their precise requirements when they use primary data. It also aids in preserving the accuracy and integrity of data. All things considered, sources are essential for obtaining precise, lucid ideas.

Secondary Data

Understanding secondary data sources is equally crucial for researchers. Even if these were gathered by others for different objectives, they might nevertheless help you with your study. Secondary data gives your research more depth and perspective. Books, research papers, and reports that present the results of earlier investigations are examples of published literature. They assist you in determining what is known and what needs more investigation. Government data, official documents such as economic reports, health statistics, and census data. Because of their precision and scope, they are dependable and frequently utilized in studies.

Population

It refers to the maximum number of people possessing knowledge about artificial intelligence and healthcare.

Sampling Frame

The sampling technique used was random sampling, by which different groups of people, belonging to various professions and age groups, were selected.

Sample Size

A sample size of respondents was selected for the meaningful study.

Study Area

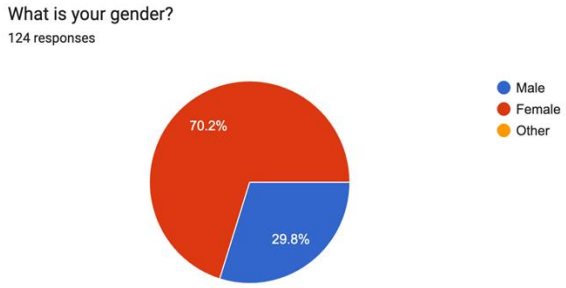
Mumbai, being a metropolitan city and the financial capital of India, is expected to have thorough knowledge about the technological advancements in healthcare, considering that the study was restricted to the city of Mumbai only.

Limitations

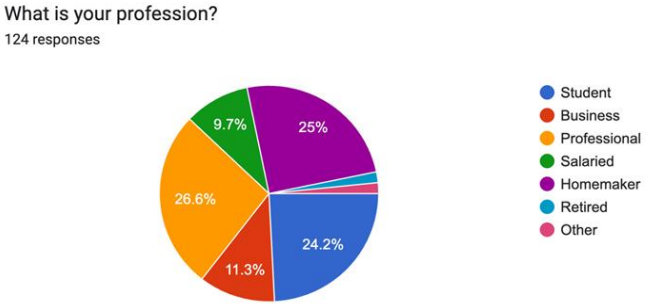
The time and cost of the research were among the prime limitations of this research. Though primary data was collected but the limited knowledge of the respondents and their bias would affect the responses. My limited abilities and expertise, especially in areas of formulating objective questions, might have affected the quality of the data. The secondary data used addressed some issues, criteria, or indicators of the research, but not all.

DATA ANALYSIS AND PRESENTATION

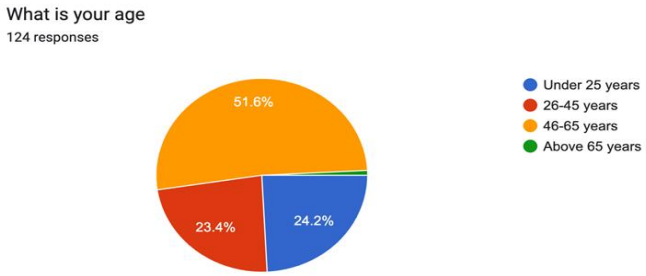
WE TOOK THE SURVEY: QUESTIONNAIRE METHOD AND RESULTS WERE AS FOLLOWS: WE GOT 124 RESPONSES TO THE COMPULSORY QUESTIONS ASKED BELOW:



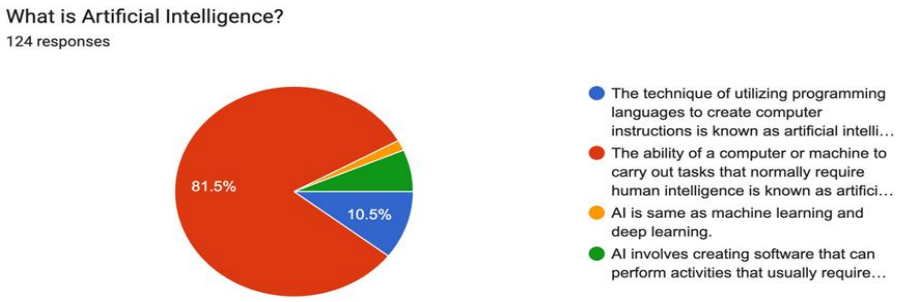
The chart above shows that respondents were predominantly female.



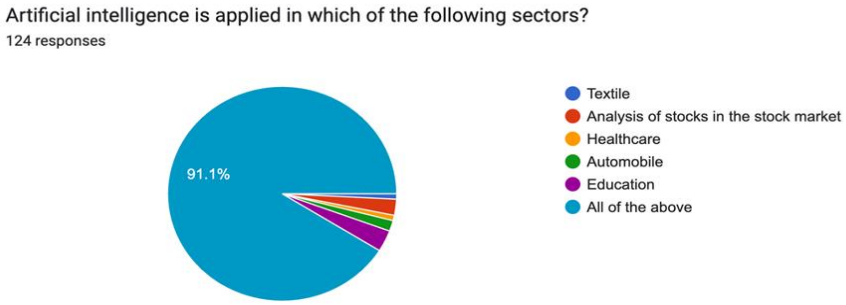
The chart above shows that respondents were spread across various professions.



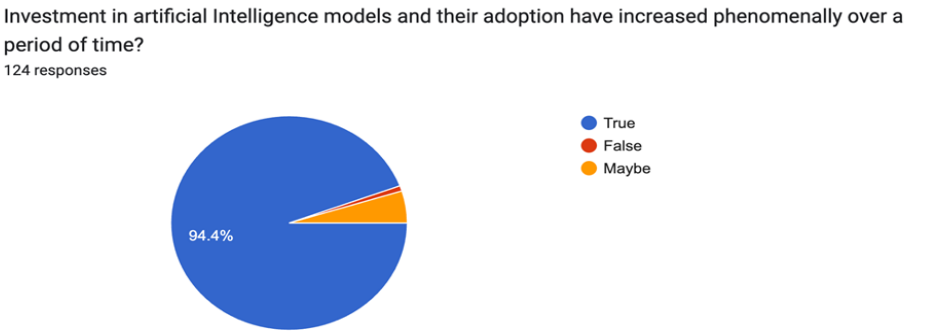
The chart above shows that the majority of the respondents are aged 45-65 years.



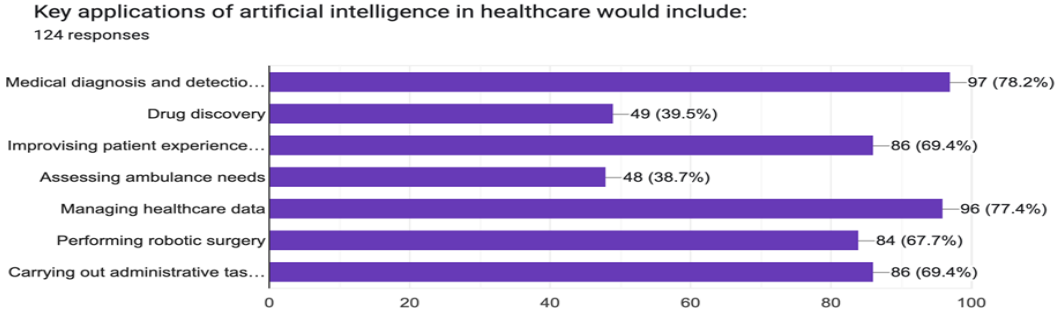
The majority of the respondents believe that AI can be best defined by the second option.



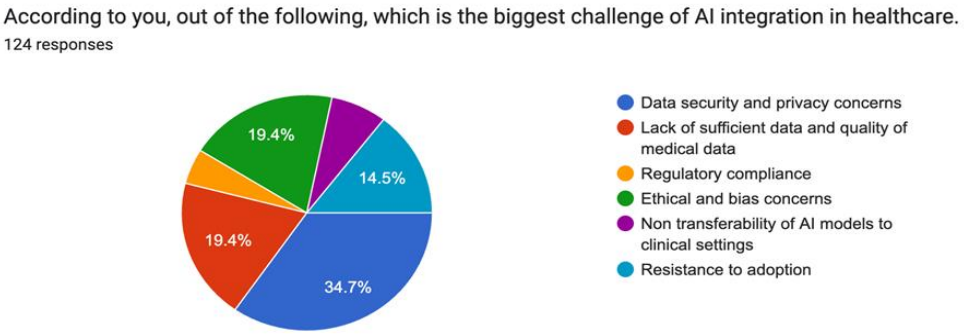
The majority of the respondents, as seen in the chart above, believe that AI can be used in all of the above sectors.



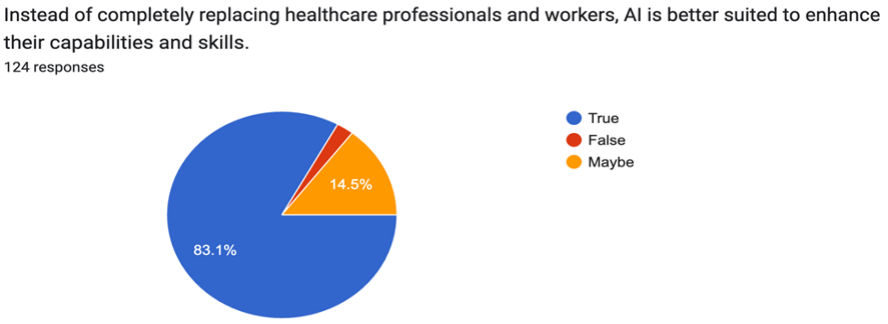
The chart above shows that most of the respondents think that investment in AI has led to its growth.



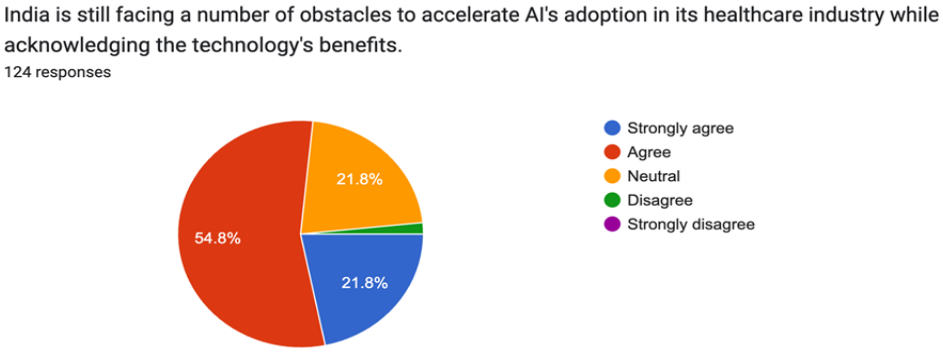
The above chart shows us that AI can help in most parts of the healthcare system, with drug discovery and ambulance needs being the least.



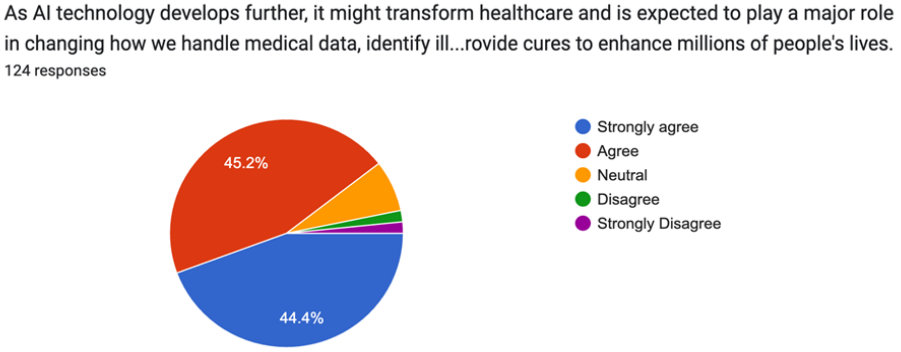
The chart above shows that all of the challenges above are relevant, since they are quite evenly split, while the majority believe that Data security and privacy concerns are the biggest challenge.



The chart above shows that the majority of people believe AI should be used to enhance human skills, rather than replace them.



In the above chart, most responses agree that India is still facing problems when it comes to AI in the healthcare industry.



In the chart above, we can see that most respondents strongly agree or agree with the statement that AI can transform healthcare.

CONCLUSION

AI is used in a wide range of sectors for a variety of activities, such as manufacturing, predictive maintenance, retail personalization, transportation route optimization, healthcare diagnosis support, and energy grid energy efficiency. Additional uses include work automation, chatbot-enhanced customer support, cybersecurity enhancement, and research and development acceleration. Artificial intelligence is being used more and more in the healthcare industry as a result of the growth in data. Pharmaceutical businesses, healthcare providers, and other life science organizations have used artificial intelligence. Making therapy suggestions and diagnosing patients are the main uses of artificial intelligence. This double-edged blade shows that artificial intelligence has already been able to mimic human labor in its early phases. AI can do a wide range of healthcare jobs just as well as or better than human experts. The extensive replacement of human positions in the business is being delayed for the foreseeable future due to a number of deployment-related issues. Furthermore, there are still a lot of ethical questions about the application of AI in healthcare. Real-time prioritizing, prescription auditing, aided diagnosis, and customized medicine are just a few of the cutting-edge features that AI-driven patient care systems provide. Healthcare professionals may optimize resource allocation, reduce mistakes, and improve patient outcomes by utilizing prescriptive analytics and machine learning. Platforms with AI capabilities evaluate patient data to produce insights that may be put into practice, allowing for more individualized treatment regimens and better population health management. High implementation costs, hazards to data privacy, and ethical worries about prejudice and job displacement are some of the difficulties that AI presents. It can speed up research and medication discovery, but in order to guarantee patient safety and the ongoing human element in care, it is necessary to carefully balance AI's capabilities with human knowledge and supervision. Since AI cannot do physical examinations on patients, physicians' work will not inevitably be replaced by it. Because they will be collaborating with AI to provide the greatest results for patients, doctors will continue to have top employment positions. Consequently, it will only help the physicians execute their jobs better.

REFERENCES

[1] https://www.strategyand.pwc.com/gx/en/industries/health/the-revolution-of-healthcare.pdf
[2] https://pmc.ncbi.nlm.nih.gov/articles/PMC6616181/
[3] https://www.researchgate.net/publication/334539401_A_Brief_History_of_Artificial_Intelligence_On_the_Past_Present_and_Future_of_Artificial_Intelligence
[4] https://www.researchgate.net/publication/324821879_How_Artificial_Intelligence_Machine_Learning_and_Deep_Learning_are_Radically_Different
[5] https://pmc.ncbi.nlm.nih.gov/articles/PMC6616181/
[6] https://www.researchgate.net/publication/227280690_The_Evolution_of_the_Health_Care_System
[7] https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-023-04698-z
[8] https://www.researchgate.net/publication/358735303_Developing_implementing_and_governing_artificial_intelligence_in_medicine_a_step-by-step_approach_to_prevent_an_artificial_intelligence_winter
[9] https://www.tandfonline.com/doi/full/10.1080/13696998.2023.2285186#d1e145
[10] https://pmc.ncbi.nlm.nih.gov/articles/PMC8826344/
[11] https://www.sciencedirect.com/science/article/pii/S2949866X24000285
[12] https://pmc.ncbi.nlm.nih.gov/articles/PMC8285156/
[13] https://pmc.ncbi.nlm.nih.gov/articles/PMC10764219/#:~:text=One%20of%20the%20downsides%20of,keystone%20of%20care%20%5B3%5D.
[14] https://pubmed.ncbi.nlm.nih.gov/35185012/
[15] https://www.tandfonline.com/doi/full/10.1080/13696998.2023.2285186
[16] https://www.researchgate.net/publication/378331229_AI_in_Indian_healthcare_From_roadmap_to_reality
[17] https://pmc.ncbi.nlm.nih.gov/articles/PMC8826344/
[18] https://pmc.ncbi.nlm.nih.gov/articles/PMC8285156/
[19] https://pmc.ncbi.nlm.nih.gov/articles/PMC10764219/
[20] https://www.researchgate.net/publication/387931411_Artificial_Intelligence_in_Healthcare_Enhancing_Knowledge_Retention_Through_Technological_Innovation
[21] https://ieeexplore.ieee.org/document/10297311
[22] https://www.nber.org/papers/w30857
[23] https://www.tandfonline.com/doi/full/10.1080/13696998.2023.2285186
[24] https://www.researchgate.net/publication/361807570_An_Study_of_Research_Methodology

APPENDIX

Questionnaire

1) What is your gender? *

- Male
- Female
- Other

2) What is your profession? *

- Student
- Business
- Professional
- Salaried
- Homemaker
- Retired
- Other

3) What is your age? *

- Under 25 years
- 26-45 years
- 46-65 years
- Above 65 years

4) What is Artificial Intelligence? *

- The technique of utilizing programming languages to create computer instructions is known as artificial intelligence.
- The ability of a computer or machine to carry out tasks that normally require human intelligence is known as artificial intelligence.
- AI is the same as machine learning and deep learning.
- AI involves creating software that can perform activities that usually require human stamina.

5) Artificial intelligence is applied in which of the following sectors?*

- Textile
- Analysis of stocks in the stock market
- Healthcare
- Automobile
- Education
- All of the above

6) Investment in artificial Intelligence models and their adoption have increased phenomenally over a period of time. *

- True
- False
- Maybe

7) Key applications of artificial intelligence in healthcare would include: *

- Medical diagnosis and detection of certain diseases, even before symptoms
- Drug discovery
- Improving patient experience through chatbots to guide healthcare decisions
- Assessing ambulance needs
- Managing healthcare data
- Performing robotic surgery
- Carrying out administrative tasks for the healthcare admin

8) According to you, out of the following, which is the biggest challenge of AI integration in healthcare? *

- Data security and privacy concerns
- Lack of sufficient data and the quality of medical data
- Regulatory compliance
- Ethical and bias concerns
- Non-transferability of AI models to clinical settings
- Resistance to adoption

9) Instead of completely replacing healthcare professionals and workers, AI is better suited to enhance their capabilities and skills. *

- True
- False
- Maybe

10) India is still facing several obstacles to accelerate AI's adoption in its healthcare industry while acknowledging the technology's benefits. *

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

11) As AI technology develops further, it might transform healthcare and is expected to play a major role in changing how we handle medical data, identify illnesses, and provide cures to enhance millions of people's lives.*

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly Disagree