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# THE IMPACT OF AI IN HEALTH CARE: DIAGNOSIS AND PATIENT CARE

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## ABSTRACT -

An exciting new era in healthcare has begin with the introduction of Artificial Intelligence (AI), which holds the promise of resolving some of the industry's most serious problems. The present review delves into the various aspects of artificial intelligence's impact on healthcare, primarily emphasising its function in patient care and diagnosis. This review explores the development of AI technologies, their use in medical diagnostics, and their significant influence on patient care procedures, drawing on a wide range of research papers. The study addresses the benefits, drawbacks, and potential applications of AI-driven healthcare technologies. In addition, it discusses the necessity of a cordial collaboration between AI and medical professionals as well as the ethical and legal ramifications of AI in healthcare.

## KEYWORDS –

Artificial intelligence, healthcare industry, electrocardiogram function, ultrasonography function

## I. INTRODUCTION –

Artificial intelligence in healthcare refers to the application of AI to different facets of the healthcare sector, combining it with related technologies like deep learning, machine learning, and natural language processing. This new field has the potential to completely transform medical organisations' administrative procedures, personalised treatment plans, diagnostics, and patient care. AI systems can reduce errors, anticipate health problems before they become serious, and ultimately save lives by effectively analysing enormous data sets and finding patterns. AI will become a more potent tool for enhancing patient outcomes and streamlining business processes in the healthcare sector as it develops, with a growing range of impactful applications. AI plays an increasing prominent role in healthcare and medical because of the advancements in learning algorithms ,computing power and the vacancy of big data sourced from the records and wearable health checking monitors. AI has increased its market in healthcare AI at the rate of 40% and it was expected that it will reach to $6.6 billion by 2021.The rapid increase in computing power due to the wide accessibility of Graphic Processor Unit that made parallel processing even more faster and the vacancy of never ending compute resources on the demand in the cloud. Learning algorithms have been more precise as well as accurate due

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to their interaction with training data which allows upcoming insight into diagnostics , patient and treatment options. The development of AI applications, have been pushed by the flood of health care as it will increase the efficiency as efficiency as well as the effectiveness of patient care. The data related to healthcare is available from varying sources such as Electronic Medical Records (EMR) as well as wearable health trackers. The rise of AI in the era of big data can assist physicians in improving the quality of patient care and provide radiologists with tools for improving the accuracy and efficiency of diagnosis and treatment. AI is well-suited to handle repetitive work processes, managing large amounts of data, and can provide another layer of decision support to mitigate errors. The research firm Frost & Sullivan estimates that AI has the potential to improve patient outcomes by 30% to 40% while reducing treatment costs by up to 50%.

According to the experts , AI will have a significant impact in varying areas of health care like clinical decision making and chronic disease management. In the recent stages of adoption, specializations like ophthalmology, cardiology and pathology, were the promises by AI algorithms.

## II. LITERATURE REVIEW –

How Artificial Intelligence is Changing the Medical Field

The healthcare industry has undergone a radical change because to artificial intelligence (AI). Improved health outcomes, individualized treatment regimens, and more precise diagnoses have resulted from its integration into many facets of patient care and medical research. Artificial Intelligence (AI) helps doctors quickly and reliably discover illness signs and trends by fast evaluating large amounts of clinical data. Artificial intelligence (AI) has a broad use in healthcare, including the analysis of radiological images for the purpose of early condition identification and the use of electronic health data to predict patient outcomes. As a result, millions of people worldwide can now receive the best care possible thanks to smarter, quicker,

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and more effective healthcare procedures. Healthcare organizations already use a variety of AI technologies.

## III. METHODOLOGIES –

Medical Research: By evaluating a large number of chemical compounds and selecting those with possible therapeutic benefits, artificial intelligence (AI) significantly speeds up the drug discovery process. Without the need for tedious and time-consuming experimentation, researchers can forecast the success rate of these substances using machine learning techniques. This considerably reduces the time needed for medication development and raises the possibility of finding novel cures for a range of illnesses.

Similarly, by examining lab data, patient histories, and clinical trial findings, AI-powered technologies can expedite the discovery of new medications. By identifying patterns that researchers and medical professionals might miss, artificial intelligence can determine the most effective treatment approaches. In the end, using AI to medical research can advance our knowledge of illnesses and the molecular processes that underlie them.

IMPACT ON HEALTH CARE DIAGNOSIS –

Diagnostic and therapy: By providing physicians with previously unheard-of levels of data-driven insights, healthcare AI has the potential to completely transform diagnostic and therapy analysis. Machine learning algorithms can find patterns and connections in enormous volumes of patient data that may be hard or impossible for human experts to find. This makes it possible to identify patients more quickly and accurately and to create individualized treatment programs that are tailored to their individual needs. AI tools may also evaluate the efficacy of medicines and make real-time changes suggestions, which can enhance clinical results and lower healthcare costs. By automating tedious administrative processes, embracing healthcare AI also leads to efficiency improvements and frees up time for medical practitioners to concentrate on providing direct patient care.

IMPACT ON PATIENT CARE –

By eliminating the need for paper records, enabling remote monitoring, and delivering individualized treatment plans based on each patient's unique medical history, AI integration in

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healthcare can also significantly improve the patient experience. When patients should seek professional care, chatbots can advise them and answer to routine medical questions. As a result, patients and healthcare professionals experience less stress and save time. During a March 2023 HIMMS conference, leaders in the industry spoke about AI's potential to "bring affordable healthcare to the doorsteps of individuals who live in areas with poorly equipped health care systems." Electrocardiogram and ultrasonography functions can now be added to smartphones, which can be used for diagnostics in underdeveloped areas.

## IV. CHALLENGES AND FUTURE DIRECTION –

Healthcare could undergo a revolution thanks to artificial intelligence, but there are certain obstacles to overcome, including hefty investment costs and moral dilemmas. With ongoing technological developments and the growing integration of AI into many facets of healthcare, AI will surely be a key factor in determining how medical care is provided in the future. In the upcoming years, its influence on healthcare is anticipated to increase. The use of AI in telemedicine, genomics, robotics, and 3D printing is one of the emerging developments that will increase the field's uses in patient monitoring, treatment planning, diagnosis, and surgical support. Healthcare providers need to make investments in workforce training and medical experts' collaboration with AI developers in order to get the most out of AI.

## V. CONCLUSION –

AI has had a tremendous impact on healthcare, presenting both opportunities and difficulties. AI has increased efficiency and accuracy in administrative work, personalized medicine, and diagnostics. It might lower healthcare expenses while enhancing patient outcomes. But there are issues with data privacy, legal barriers, and the requirement for human supervision. In summary, artificial intelligence (AI) has the potential to completely transform healthcare, but its application needs to be carefully managed to optimize its advantages and minimize its risks.

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