Comparison Between Healthcare Professionals and Artificial Intelligence (AI) Tools in Health Care System

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***Abstract*—Artificial intelligence (AI) has the potential to make significant progress toward the goal of making the healthcare more personalized, predictive, interactive and preventive. Besides this AI-based systems raise concerns regarding the data security and privacy. As health records are vulnerable and important, hackers often target them during data breaches. Basically, there is debate about how far artificial intelligence (AI) can be used in the health care sector. Thus, maintaining the confidentiality of medical records is crucial. This study enlightens the possible limitations of AI in comparison to a Healthcare professionals in the implementation of healthcare sector. AI is a powerful tool that can assist healthcare professionals, but cannot replace them, because healthcare professional study, diagnose, treat and prevent illness, injury. In this AI can help with diagnosing diseases, developing treatments and can predict patient health trends but it lacks the ability to understand human emotions, non-verbal cues, and shift in tone. Human doctors, with years of experience can easily understand the patients. However, the AI can help improving data accessibility assisting healthcare professionals in taking right step to prevent illness. AI can be implemented to reduce administrative errors and save vital resources. AI has the potential to revolutionize the way we treat diseases, develop new medicines and personalize treatments to fit individual patients. There is no doubt that it is an innovative technology which promises extraordinary benefits to medical sector, but humans will be required due to complex, non-linear necessities of medical care. The doctor-patient relationship is built on empathy and trust, which cannot be replicated by artificial intelligence.**

***Index Terms*—Artificial Intelligence*, Enlightens*, Confidentiality*, Accessibility*, Personalize*.**

I. INTRODUCTION

Artificial intelligence (AI) has the potential to make significant progress toward the goal of making the healthcare more personalized, predictive, interactive and preventive. AI is a powerful tool that can assist healthcare professionals, treat and prevent illness, injury. In this AI can help with diagnosing diseases, developing treatments and can predict patient health trends. However, the AI can help improving data accessibility assisting healthcare professionals in taking right step to prevent illness. AI can be implemented to reduce administrative errors and save vital resources. (Riaño *et al.,* 2019).

Future Prospects of AI In Healthcare System

AI in healthcare has enormous potential to revolutionize the sector in a number of important ways, including: AI-powered personalized medicine can enhance patient outcomes by providing more accurate treatments by analysing genetic information, medical histories, and lifestyle factors (Holley K *et al.,* (2021).

- Diagnostics and Imaging: AI-powered technologies, such as those for pathology or radiology, may analyze medical pictures (X-rays, MRIs, etc.) more quickly and accurately than traditional methods, assisting physicians in identifying illnesses like cancer, heart disease, or neurological disorders earlier (Amin A *et al.,* (2024).
- Drug Development and Discovery: By forecasting the potential behaviours of various substances, artificial intelligence (AI) can speed up the drug discovery process, cutting down on the time and expense of introducing new medications to the market (Mahler M *et al.,* (2021).
- Clinical Decision Support: AI can aid healthcare providers by delivering evidence-based guidance, leading to more precise diagnoses and treatment strategies, minimizing human mistakes, and enhancing consistency in care delivery.
- Administrative Efficiency: AI can optimize administrative processes such as scheduling,

billing, and processing claims, enabling healthcare professionals to devote more attention to patient care (Lidströmer N *et al.*, 2022).

- Remote Monitoring and Telemedicine: AI can empower wearable technology and telemedicine solutions to monitor patients continuously, detect health condition changes, and facilitate virtual consultations that enhance healthcare accessibility.

Predictive Analytics: AI can evaluate extensive datasets to forecast patient outcomes, recognize populations at risk, and assist in early intervention approaches, potentially averting serious health complications. For quick instance refer the Figure 1 (Bohr *et al.*, (2020).

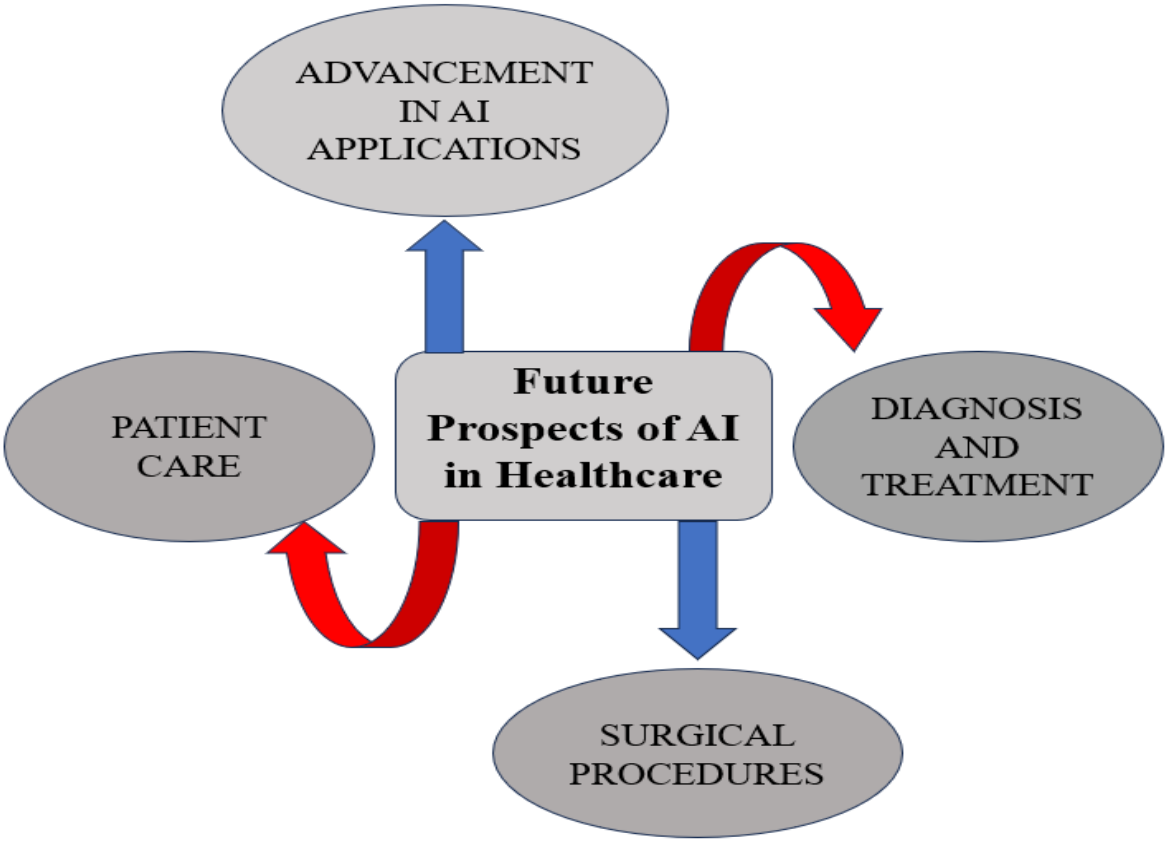

Figure 1 Future Prospects of Artificial Intelligence in Healthcare Sector

Merits of AI that can lead to advancement in Healthcare System

The use of AI in healthcare is revolutionizing how physicians identify, treat, and oversee patient care. It is employed for purposes such as:

- Diagnostics: AI is faster and occasionally more accurate than human doctors at analysing medical pictures, such as MRIs and X-rays. (Mahler *et al.*, 2021).
- Predictive analytics: By examining enormous volumes of patient data, AI assists in forecasting disease outbreaks, patient risks, or illness development.

  AI can help with personalized medicine by helping to create treatment strategies that are specific to each patient's genetic composition and medical background. (Lidströmer *et al.*,2022).
- Virtual Health Assistants: AI-powered chatbots and virtual assistants aid with appointment scheduling, prescription reminders, and patient inquiries.
- Treatment Discovery: By evaluating intricate biological data and forecasting possible treatment candidates, AI speeds up the process of finding new medications (Brown, N *et al.*, (2020).

II. MATERIAL AND METHODS

The myriads of resources were insighted to explore all the related data which is mentioned in paragraphs of this article from various digital platforms like PubMed and Google Scholar.

AI versus Healthcare Professionals

Given that each has distinct advantages and functions in healthcare, the comparison between AI and physicians is significant. Below is a summary of their differences and complementary qualities:

Strengths of AI

a) Data Processing and Speed: AI is far more rapid than a doctor in analyzing large volumes of data, including genetic information, imaging, and medical records. In emergency scenarios or for diagnosing problems that necessitate examining intricate patterns or huge datasets, this enables quick decision-making (Higgs, J *et al.,* (2008).

b) Pattern Recognition: In fields like radiology, pathology, and dermatology, AI excels at finding patterns in data. Large dataset-trained algorithms can occasionally identify anomalies (such rare diseases or malignant lesions) with a high degree of accuracy, sometimes outperforming human physicians (Pantanowitz L *et al.,* (2017).

c) Consistency: Because AI is immune to stress, weariness, and cognitive biases, it can produce consistent results over a vast volume of work. This is particularly useful for activities like predictive analytics and medical imaging interpretation (Cozby P *et al.,* (1989).

Strengths of Healthcare Professionals

Physicians' strengths include clinical expertise and judgment. When it comes to patient care, doctors offer years of education, practical experience, and clinical judgment. When making decisions, they are able to take into account the particular circumstances of each patient (such as their lifestyle, emotional state, and medical history), something that AI cannot do (Butts, S *et al.,* (1961).

a) Empathy and Communication: Providing care that includes consolation, diagnosis explanations, and emotional support is one of the most important tasks that doctors play. Building trust, assisting patients in managing their diseases, and assisting them in making well-informed decisions all depend on this human touch (Hefti R *et al.,* (2018).

b) Complex Decision Making: Although AI is capable of data analysis, it lacks the ability to make thoughtful conclusions based on intricate patient circumstances, unlike a physician. For instance, AI cannot completely replace a doctor's capacity to balance conflicting factors, moral considerations, and individual preferences while making treatment recommendations (WIPO *et al.,* (2019).

c) Adaptability: Physicians are able to think critically, quickly adjust to novel, unexpected circumstances, and integrate fresh data or surprising findings into their decisions. Because AI systems rely on their training data and programming, they may not be able to deal with new scenarios as well (Neupane B *et al.,* (2019).

Challenges that can be faced while working with Artificial Intelligence

- Trust: Compared to an AI system, patients are typically more likely to trust a doctor they can comprehend and speak with. In patient care, the so-called "human element" in decision-making is crucial.
- Bias in AI: When AI systems are educated on data that contains biases, they may draw incorrect conclusions, especially when dealing with rare diseases or diverse populations (McStay A *et al.,* (2018).
- Regulatory Concerns: Data privacy, regulatory supervision, and the moral ramifications of automated decision-making are some of the issues brought up by the use of AI in healthcare.
- Cost: Although AI has the potential to lower healthcare expenses in certain situations, creating and deploying AI systems might require a significant upfront investment. Furthermore, the newest AI-powered technology might not be available to certain patients
- Liability and Legal Concerns: It is difficult to determine who is legally liable in the event that an AI system commits a mistake. Liability issues may surface if a machine gives a patient harmful counsel. These include whether the AI, its creators, or the healthcare provider should bear responsibility.

The following are the drawbacks of artificial intelligence that are expected to be seen which are

mentioned in the figure 2 below (Buyers J *et al.*, (2023).

Figure 2: Drawbacks of Artificial Intelligence

III. DISCUSSION

AI can help improving data accessibility assisting healthcare professionals in taking right step to prevent illness. AI can be implemented to reduce administrative errors and save vital resources. AI-powered technologies, such as those for pathology or radiology, may analyze medical pictures (X-rays, MRIs, etc.) more quickly and accurately than traditional methods. AI can aid healthcare providers by delivering evidence-based guidance, leading to more precise diagnoses and treatment strategies, minimizing human mistakes, and enhancing consistency in care delivery. When it comes to patient care, doctors offer years of education, practical experience, and clinical judgment. When making decisions, they are able to take into account the particular circumstances of each patient (such as their lifestyle, emotional state, and medical history), something that AI cannot do. Emotional support is one of the most important tasks that doctors play. Building trust, assisting patients in managing their diseases, and assisting them in making well-informed decisions all depend on this human touch.

IV. CONCLUSION

Artificial Intelligence (AI) can be comparable to healthcare professionals in diagnostic accuracy and safety, but AI cannot replace medical professionals. There will be always a need for supervision in the functioning of AI in health care sector. In some aspects AI can be as accurate as doctors in diagnostic purposes, have rapid responses, can offer low expenses. But AI lacks the ability to provide empathy and human connection that patients need. As Human life is precious, proper caring and safety is needed to be maintained, and can't be compromised. Doctors can help maintaining the confidentiality and acts as partners in healing process. Artificial Intelligence is a potentially capable tool which can make advancements in the healthcare in future. AI can empower the future generations in the medical or health sector. It can help in improving the diagnosis and treatment of patients, finding efficient methods to improve patient compliance, it can also help developing new applications based on sensors which can help in improved medical procedures. However, a human will always be needed to supervise it, as the

errors and security risks can occur. Therefore, Doctors and AI will join forces to skyrocket the Healthcare services.

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