ISSN: 3005-8449
IRABCS https://irabcs.com INNOVATIVE RESEARCH IN APPLIED, BIOLOGICAL AND CHEMICAL SCIENCES

Short Communication

IRABCS, vol. 2, issue 1, pp. 2-4, 2024
Received: December 20, 2024
Revised: April 30, 2024
Accepted: May 6, 2024
https://doi.org/10.62497/irabcs.2024.21

Adoption of ChatGPT and other Artificial Intelligence (AI) among Physicians Worldwide: Barriers and the Way Forward

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How to cite: Muhammad Muneeb Khan, Muhammad Oneeb Khan, Ibad ur Rehman. Adoption of ChatGPT and Other Artificial Intelligence Among Physicians Worldwide: Barriers and the Way Forward. IRABCS. 2024; 2(1): 2-4. DOI: https://doi.org/10.62497/irabcs.2024.21 Available from: https://irabcs.com/ojs/article/view/21

Abstract

Artificial Intelligence (AI) has emerged as a transformative force in modern society, revolutionizing various industries including healthcare. ChatGPT, a language processing tool, has garnered significant attention for its ability to simulate human-like conversations and assist in a myriad of tasks. Despite its potential, the adoption of ChatGPT among physicians worldwide remains limited, particularly in regions like Asia, Latin America and Sub-Saharan Africa. This reluctance poses barriers to leveraging AI for novel diagnosis and treatment approaches, hindering progress in global healthcare. In this study, we explore the medical importance of AI, particularly ChatGPT, highlighting its potential to reduce medical errors and provide accurate healthcare information. However, concerns regarding bias, dependency and plagiarism have surfaced, necessitating cautious integration and human oversight in its application. Recommendations including increasing awareness among physicians, implementing ethical guidelines, and utilizing AI-detecting software to mitigate risks. Furthermore, collaboration between international medical associations, policymakers, and governing bodies is essential to promote AI adoption and ensure its ethical use. While AI holds promise for advancing healthcare, its full potential hinges on overcoming current barriers and fostering a symbiotic relationship between technology and human expertise. Future research must address lingering uncertainties and ethical considerations to realize the transformative impact of AI in medicine.

Keywords: Artificial Intelligence (AI), healthcare, chatgpt, medical diagnostics, physicians, barriers, way-forward

Introduction

Artificial Intelligence (AI) has gained a lot of attention in recent times. It involves using computers and particular software and applications which can make the computers perform tasks that were previously thought to be only humanly possible because it required human intelligence and emotions. It involves the use of advanced algorithms and computer programs to simulate human intelligence and learning, enabling machines to perform complex tasks more efficiently and accurately than humans.One of the recent additions to the world of AI that revolutionized the modern era is ChatGPT [1]. ChatGPT is a natural language processing tool that allows you to have human-like conversations. Moreover, it also assists you in day-to-day tasks such as writing an email or essays, or even codes (and much more).

ChatGPT was launched as a prototype on the 30th of November, 2022, and quickly gathered mass attention for its ability to answer almost any question, regardless of the field of study [2]. The recent and more improved version, called GPT-4 was released on March 14, 2023 with many updates such as responding to different images and processing of more than eight times of the words that the previous version could [3].

There have been a few pieces of research in recent times that give an insight into what the future of AI, particularly ChatGPT looks like in the near future. In Medicine, this is beginning to have an impact at various levels e.g. a study showed that it is significantly reducing the chances of medical errors, particularly by providing rapid, yet comparatively accurate diagnosis and interpretation of the lab reports and radiographs [4]. Also, despite the hype and importance of ChatGPT in the field of medicine, its adoption has not fully gained ground among most physicians in the world, especially those in Asian, Latin

American and the Sub-Saharan regions. As a result of this limited use of this modern technology among the physicians around the world, barriers to novel and sophisticated diagnosis and treatment of diseases would still be on the increase, which could compound more health challenges to the international communities. Our current study therefore aimed to improve the awareness strategies in the adoption of ChatGPT and other Artificial Intelligence among Physicians around the world as well as breaking the barriers.

Medical Importance of Artificial Intelligence (AI)

Artificial Intelligence (AI) has gained significant attention in the field of medicine, especially in radiology, where it has shown promising results in the analysis and interpretation of medical images. Chest X-rays, which are one of the most commonly performed medical scans, have been the focus of numerous AI applications. One study compared the accuracy of an AI algorithm, based on a convolutional neural network, in detecting pneumonia in over 112,000 labeled frontal chest X-ray images with that of four radiologists. The study found that the algorithm outperformed the radiologists in detecting pneumonia. [4] However, it is important to note that the study's test may not be directly comparable to the daily tasks of a radiologist, who is typically required to diagnose a range of medical conditions beyond pneumonia in any given scan.

Although AI has gained widespread popularity, it is not without flaws, and it is essential to address these to prevent potential mishaps [5]. A recent instance of this can be seen in the case of IBM Watson Health's cancer AI algorithm, called Watson for Oncology [6]. The algorithm is used by hundreds of hospitals worldwide to suggest treatment for cancer patients. However, the algorithm was based on limited input from oncologists, relying on a small number of synthetic cases instead of real data. As a result, many of the treatment recommendations were found to be harmful rather than helpful. For example, the algorithm suggested the use of bevacizumab [4], which is contraindicated in patients with severe bleeding, potentially causing more harm than good. This example highlights the potential for AI to have unintended harmful consequences in the medical field if relied upon solely for medical advice, emphasizing the need for caution and human input in the use of AI in healthcare.

Adoption of ChatGPT among the physicians

Most physicians around the world still lack the usefulness and importance of ChatGPT in medical field. Most of these physicians especially those in some parts of Europe, Asia, Latin America, andAfrican continents have poor knowledge, attitude, and perception about AI in general. Obviously, AI is still new to most physicians around the world as well as the patients. Although, recent studies have demonstrated the potential of ChatGPT, in providing accurate and reliable information related to healthcare. In one study, the ability of ChatGPT to answer questions related to cirrhosis and hepatocellular carcinoma (HCC) was evaluated [7]. The results showed that ChatGPT had extensive knowledge of cirrhosis and HCC, with 79.1% and 74.0% correct answers respectively. However, only a small proportion of the answers (47.3% for cirrhosis and 41.1% for HCC) were labeled as comprehensive [7]. The study concluded that while ChatGPT may not be as proficient in the domains of diagnosis and preventive medicine, it performed well in providing basic knowledge, lifestyle advice, and treatment recommendations. These findings suggest that AI-based chatbots like ChatGPT have the potential to assist healthcare professionals in providing accurate and reliable healthcare information to patients.

Barriers to ChatGPT among the physicians

The limitations listed with the use of ChatGPT in the field of medicine include the potential of biasness for a particular side or party [8] which can affect the expected outcome of the study. According to a recent study, it can also affect the ability of medical studentsto think critically and build good communicational skills by becoming dependent on its use [9]. Apart from this, one of the major questions that need to be addressed is that 'Could ChatGPT be a source of plagiarism for research writing?' It was briefly addressed and proven that it could be a source of plagiarism [10, 11]. Students, even professionals, do not have to use critical thinking and put in extra effort to come up with good research anymore. Instead, they can plug in the questions into the AI chat box and get everything directly copy pasted and getting credits for the work that they did not do.

There is a software named 'GPTZero' [12] that can check on whether a particular article was AI-generated or written by a human and so there is a high chance that the plagiarism (if present) will be detected. There have been studies showing the assistance of ChatGPT by the doctors to decrease the chances of medical error by a statistically significant percentage. However, a recent study shows that it is still not perfect and there have been reports of ChatGPT giving surprisingly wrong conclusions and interpretations [12]. It is therefore advised to the physician to be updated and use other trusted sources along with it and not solely rely on it, to reduce the chances of medical errors.

Recommendations and way-forward

The positive impact of Artificial Intelligence in the field of Medicine cannot be denied as it has proven to reduce the chances of medical errors by a significant percentage. However, despite the recent popularity, it is recommended to use it as a source for additional information and not completely rely solely on it. Physicians should cross-check the information with other trusted resources before application of the interpretation given by the AI. Moreover, one of the most important things to worry about is the chances of plagiarism by AI-assisted help. There should be strict rules made, along with constant check using AI-detecting software. Despite the flaws, the way ChatGPT revolutionized the field of Medicine, either by writing hospital paper works, giving medical diagnosis and interpretations (and much more),

we cannot deny the way it successfully made its position firm in the field of Medicine and now the future looks promising with doctors and AI working together for the betterment of the patients.

More awareness and campaigns about the medical importance of ChatGPT should be emphasized by the World Medical Association (WMA), and other International Medical Associations around the world to all the physicians in the world especially those living in the third world countries. All the policy-makers in different countries around the world should start working on implementation and adoption of ChatGPT and other AI machines among the physicians. All authorities in respective countries in the world should facilitate the establishment of special training courses on modern technology, building more computer medical centers, and employing more medical experts in AI. The United Nations and other governing bodies in the world should also emphasized strongly on the ethical consideration about the use of AI among the physicians around the world.

Conclusion

We can conclude by saying that eventhough Artificial Intelligence (AI), particularly ChatGPT have shown promising results in the field of Medicine, especially when it came to providing basic healthcare information to the patients, helping the healthcare workers with generating patient reports and other such paperworks, and interpretation of medical images; its adoption among physicians around the world is still limited. Some of the barriers which resulted in its limited use among the physicians include the chances of medical error, poor knowledge and perception of AI among physicians, potential for unintended harmful consequence, and chances of biases that can affect the outcome of the studies. Few of the ways through which these barriers can be broken include incorporating human input into the use of AI and not solely becoming dependent on it, improving awareness of its uses so that more physicians can use it for the betterment of the healthcare, and ensuring AI-based systems that are unbiased and transparent. Additionally, due to a recent advancement in technology, there are comparatively few researches on ChatGPT and so there are still many qualities that are not entirely conclusive for now. Whether the impact of advancement of AI into the field of Medicine turn out to be a breakthrough for the barriers of healthcare system or not, that only time will tell.

Future Perspective

The utilization of AI, exemplified by ChatGPT, presents unprecedented opportunities to enhance healthcare delivery worldwide. However, realizing its full potential requires concerted efforts to address barriers and ensure responsible integration into medical practice.

Authors Contribution

All authors contributed equally in this study.

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