Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v29i04.5882

REVOLUTIONIZING HEALTHCARE: THE ROLE OF ARTIFICIAL INTELLIGENCE AND ITS ROLE IN FACILITATING THE SERVICE PROVIDED TO THE PATIENT.

Amal Mohammed Abdu[1*], Fahad Saeed Mubarak Al-Dosari[2], Ali Shaiya Ali Aldousary[3], Fahhad Jarad Alshammari[4], Abdulaziz khalaf almuways[5], Marzouq Aleed Marzouq Al-Mutairi[6], Ali thaar Almutairi[7], Saleh Mansour Ali Alabbas[8], Abdulrahman Dhafer Salem Alalharith[9], Mansour Hamad Hussain Al Sharhuf[10]

[1*]family medicine, Mursalat primary health care, Riyadh
[2]Social worker, Alsulayel General Hospital, Alsulayel
[3]Social worker, Alsulayel General Hospital, Alsulayel
[4]Healthy Assistant, Al Faisaliyah PHC, Hafar Al-Batin
[5]health assistant, Emergency, Disasters and Medical Transport, Hafr Al-Batin
[6]Healthy Assistant, King Khaled Hospital in Hafar Al-Batin, Hafar Al-Batin
[7]Healthy Assistant, King Khaled Hospital, Hafr Al-Batin
[8]Public Health specialist, Ministry of health - King Abdulaziz International Airport Jeddeh
[9]Public Health specialist, Ministry of health - King Abdulaziz International Airport Jeddah-
[10]Public Health technician, Ministry of health - King Abdulaziz International Airport Jeddah

***Corresponding author:** Amal Mohammed Abdu
*family medicine, Mursalat primary health care, Riyadh

Abstract
The adoption of artificial intelligence (AI) in the healthcare sector is increasing, and AI-based technologies are expected to impact not only patient care but also how healthcare professional's work. However, the actual impact of different AI applications on the jobs of healthcare professionals has not yet been studied. As in business and e-commerce, artificial intelligence and machine learning have many uses in the healthcare sector. With this technology, the possibilities are almost endless. Through its cutting-edge applications, machine learning is helping to improve the healthcare sector and in primary/tertiary patient care and public healthcare systems, these systems are improving the quality of automation and intelligent decision-making. Our findings demonstrate that applications of AI in 1) diagnosis and treatment, 2) patient engagement and empowerment, and 3) managerial activities have an impact on various components of healthcare professionals' job design, including functional autonomy and control; Diversity and use of skills; functional reflexes; Social and relational aspects. and work requirements. Implications for future research and practice are discussed.

Introduction
Artificial intelligence in healthcare is an umbrella term to describe the application of machine learning algorithms and other cognitive technologies in medical settings. In simple terms, artificial intelligence is the simulation of computers and other machines of human cognition to be able to learn, think, and make decisions and actions [1]. Thus, employing artificial intelligence in medical and health care is the use of machines to analyze medical data and act on the basis of it to predict a specific outcome.

Potential applications of artificial intelligence in healthcare include: improving the speed and accuracy of diagnosis and screening for diseases; Assist with clinical care; Promote health research and drug development; and support various public health interventions, such as disease surveillance, outbreak response, and health systems management [2]. AI can also enable patients to take more control over their healthcare and understand their changing needs. It can also help bridge gaps in access to health services for countries with limited resources and rural communities, where patients often have difficulty accessing healthcare workers or medical professionals [3]. This rise in AI is expected to impact the role of healthcare professionals, especially those who work with digital data such as radiologists [4] or pathologists [5], due to the potential for widespread automation. The "father" of deep learning. The dominance of AI in healthcare is expected to take over some activities currently performed by doctors or healthcare managers [6] or replace those who do not use the technology [7], and thus potentially Threatening their job security. On the other hand, there are also assertions that although AI technologies can be used to automate certain tasks and augment clinical decision-making, it is not expected that doctors will be replaced by intelligence Artificial Intelligence [5], due to the current limitations of artificial intelligence (Reddy, Fox and Purohit 2019) as well as the severe global workforce shortage [8].

Artificial intelligence (AI) in healthcare and medicine has received plaudits for the tremendous promise it holds in recent years, but it has also been the subject of intense debate. This paper provides a broad overview of how AI can improve medical diagnosis and treatment, enhance physician productivity, and improve the use of available human and technological resources. [9,10]. In more detail, the research identifies and explains the key clinical, social, and ethical risks posed by AI in healthcare, including the potential for errors and patient harm, and the potential for bias and high risk. In health inequalities, lack of transparency and trust, vulnerability to hacking and data privacy violations [11]. In order to reduce these risks and maximize the benefits of medical AI, the study proposes a number of policy options and mitigation measures, including multi-stakeholder engagement throughout the production life of the AI, increased transparency and traceability, and comprehensive clinical validation. Of artificial intelligence tools, training and education in the field of artificial intelligence for both citizens and doctors [[12].

Related works

Researchers and healthcare professionals are interested in artificial intelligence (AI) in the healthcare industry. Little prior research, including research in management, accounting, business and management, and the health professions, has examined this topic from an interdisciplinary angle.

(Lee & No Yoon), 202), they presented the study about The impact of artificial intelligence (AI)-based technological applications on the healthcare sector is examined in this study. This study examined numerous actual examples of AI applications in healthcare in addition to doing a thorough analysis of the literature. The findings show that significant hospitals are currently utilising AI-enabled solutions to support medical professionals in patient diagnostic and treatment activities for a variety of ailments. AI technologies are also having an impact on how well hospitals manage their managerial and nursing staffs. Healthcare professionals are welcoming AI, but its applications offer both the utopian (new chances) and the dystopian (challenges to overcome) perspectives. To give a fair assessment of the usefulness of AI applications in healthcare, we analyse the specifics of both those potential and constraints. It is obvious that the quick development of AI and associated technologies would assist healthcare providers in enhancing patient value and streamlining operational procedures. However, in order to fully profit from what technology, have to offer, effective implementations of AI would necessitate excellent planning and strategies to revolutionize the overall care service and operations [13]. Tursunbayeva & Renkema, they study implemented about Artificial intelligence (AI) is being more widely used in the healthcare industry, and AI-based solutions are expected to have an impact on not only patient care but also how healthcare workers perform their jobs. However, it is still unknown how certain AI applications will affect the employment of healthcare workers. We assessed 80 publications from the grey-literature platform

"Singularity Hub" using a methodology to analyses AI applications in healthcare and the job design model. Our results show that the various elements of healthcare professionals' jobs, such as job autonomy and control, skill variety and use, job feedback, social and relational aspects, and job demands, are impacted by AI applications in 1) diagnosis and treatment, 2) patient engagement and empowerment, and 3) administrative activities. Future research and practice implications are highlighted [14].

Bajwa, Munir, & Nori (2021), they discussed the study about The field of computer science known as artificial intelligence (AI) has the potential to profoundly alter how healthcare is provided and how medicine is practiced. In this review paper, we explain current developments in the application of AI in healthcare, lay out a road map for creating efficient, dependable, and secure AI systems, and speculate on the potential future of AI-enhanced healthcare systems [1].

Methodology

This study discusses the potential scope of application of AI methodologies in the field of telehealth. Based on reports of recent developments, these approaches are clinically oriented and provide some insight into current trends. Based on their professional experience, the authors found recent literature examples of advances in telehealth using AI to help deliver or enhance telehealth. Clinical diagnosis is essentially a data processing and analysis activity where specialists attempt to collect and integrate sufficient data points about a patient to ascertain their condition. Clinical diagnosis is an art and science with a long history. Early diagnostic techniques relied heavily on clinical observations of the patient's condition in addition to palpation and auscultation techniques. The healthcare industry has been the leader in adopting AI technologies. The nature of the services and the sensitivity of a large portion of end users has led to a great deal of research and discussion on the topic of responsible AI. To identify the components of responsible AI in the healthcare sector and explore its impact on value creation and market performance, we use a mixed-methods study..

Discussion

Artificial neural networks, machine learning, robotic process automation, and data mining are used to program artificial intelligence (AI), an algorithm-based computing technology, to self-learn from data and make intelligent predictions and judgments in real [4]. The definition of artificial intelligence (AI) in the healthcare context is the use of intelligent, data-driven technologies that use healthcare resources and data more efficiently and effectively to support and simplify healthcare decision-making and, as a result, deliver better healthcare services. Which are designed to suit individual needs. AI technologies often use machine learning algorithms to perform “intelligent” analytical and inferential activities on health data, which are used, among other things, to detect and predict epidemics and diseases (informatic epidemiology), diagnose and manage chronic and neurological conditions, and interpret scans. Medical. And radiographs, providing health care services and treatments, discovering new medicines, and developing new medical technologies. In addition, AI has the potential to address societal issues of global health and accelerate the achievement of the Sustainable Development Goals for health and well-being. However, due to a number of ethical concerns, including algorithm bias leading to inconsistent or discriminatory outcomes, privacy violations, disputes over data ownership, and lack of transparency in the use of data, there is growing concern about the utility of AI in healthcare. Artificial intelligence (AI) is the term used to describe the integration of human intelligence into machines. Artificial Intelligence holds great promise to make a significant impact in the healthcare industry. In fact, healthcare organizations are using AI to achieve affordable medical interventions and positive patient outcomes despite facing unprecedented challenges related to changing demographics, administrative needs, increasing morbidity, changes in demand for information technology, workforce shortages, and aging [5,6]. For example, the technology is already helping surgeons improve the outcomes of robotic surgery using the help of artificial intelligence. According to reports, doctors are using AI to make early diagnosis of diseases, especially chronic conditions like cancer. Information and communications technology (ICT) is a

critical component of a digitally transformed business that can improve efficiency and competitiveness. Advanced digital technology and devices are widely used to innovate and generate value across industries in today's Fourth Industrial Revolution (4IR) era.

There is no exception in the healthcare sector. Hospitals and other healthcare facilities are actively implementing digital technologies such as artificial intelligence (AI), machine learning, smart sensors and robotics, big data analytics, and the Internet of Things (IoT) to enhance operational efficiency and quality of care. This trend is particularly evident in advanced economies [6]. The investigation revealed that there is a growing body of literature in this area. It focuses on clinical decision making, patient data and diagnostics, predictive medicine, and health services management. Most studies were produced by the United States, China, and the United Kingdom. According to keyword research, artificial intelligence (AI) can help doctors diagnose and prognose disease and plan treatment [9].

Conclusion

The application of artificial intelligence is required to improve the effectiveness of health services management and clinical judgment. We consider some of the ethical issues faced by clinical applications of AI in order to facilitate early uptake and continued use in the healthcare system. Remote assessment, remote diagnosis, remote interactions, and remote monitoring are some examples of how AI can be used to deliver healthcare remotely. Wider use will require further advances in the underlying algorithms and validation of the method. As AI-powered telemedicine becomes more widespread, some important social and ethical issues must also be considered more broadly within the healthcare system. The literature reveals a number of applications of AI for healthcare services as well as an unexplored area of research. For example, data-intensive analysis and knowledge-based management in AI initiatives require skills and understanding of data quality. Researchers' understanding and processing of future research on AI in the healthcare industry may be supported by insights.

References

1. Bajwa, J., Munir, U., & Nori, A. (2021). Artificial intelligence in healthcare: transforming the practice of medicine. Future Healthcare Journal, pp. 1-7.
2. Javaid, M., Haleem, A., & Singh, R. (2022). Significance of machine learning in healthcare: Features, pillars and applications. International Journal of Intelligent Networks, pp. 58–73.
3. Kumar, P., Dwivedi, Y., & Anand, A. (2021). Responsible Artificial Intelligence (AI) for Value Formation and Market Performance in Healthcare: the Mediating Role of Patient's Cognitive Engagement. Information Systems Frontiers, pp. 1-24.
4. Chen Y, C Stavropoulou, R Narasinkan, A Baker and H Scarbrough (2021) Professionals' responses to the introduction of AI innovations in radiology and their implications for future adoption: a qualitative study. BMC Health Services Research 21(1), 813. https://doi.org/10.1186/s12913-021-06861-y
5. Davenport T and R Kalakota (2019) The potential for artificial intelligence in healthcare. Future Healthcare Journal 6(2), 94–98.
6. Reddy S, J Fox and MP Purohit (2019) Artificial intelligence-enabled healthcare delivery. Journal of the Royal Society of Medicine 112(1), 22–28.
7. Meskó B, G Hetényi and Z Győrffy (2018) Will artificial intelligence solve the human resource crisis in healthcare?BMC Health Services Research 18(1), 545.
8. Britnell M (2019) Human: solving the global workforce crisis in healthcare. New York, USA: Oxford University Press.
9. Kuziemsky, C., Maeder, A., & John, O. (2019). Role of Artificial Intelligence within the Telehealth Domain. Yearb Med Inform, pp. 35-40. Lee, D., & No Yoon, S. (2021). Application of Artificial Intelligence-Based Technologies in the Healthcare Industry: Opportunities and Challenges. Int.

10. J. Environ. Res. Public Health, pp. 1-18. Secinaro, S., Calandra, D., & Secinaro, A. (2021). The role of artificial intelligence in healthcare: a structured literature review in healthcare: a structured literature review. Secinaro et al. BMC Med Inform Decis Mak, pp. 1-23.
11. Siala, H., & Wang, Y. (2022). SHIFTing artificial intelligence to be responsible in healthcare: A systematic review. Social Science & Medicine, pp. 1-15.
12. Sunarti, S., Rahman, F., & Naufal, M. (2021). S70Artificial intelligence in healthcare: opportunities and risk for future. Gac Sanit, pp. 67-70. Tursunbayeva, A., & Renkema, M. (2022). Artificial intelligence in health-care: implications for the job design of healthcare professionals. Asia Pacific Journal of Human Resources, pp. 1-43.
13. Lee, D., & No Yoon, S. (2021). Application of Artificial Intelligence-Based Technologies in the Healthcare Industry: Opportunities and Challenges. Int. J. Environ. Res. Public Health, pp. 1-18.
14. Tursunbayeva, A., & Renkema, M. (2022). Artificial intelligence in health-care: implications for the job design of healthcare professionals. Asia Pacific Journal of Human Resources, pp. 1-43.