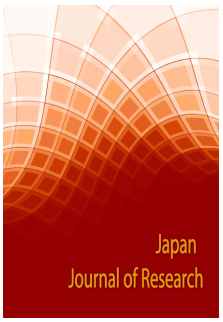
Japan Journal of Research

Original Article



Digitalization and Artificial Intelligence as Motivators for Healthcare Professionals

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- Received Date: 30 Nov 2024
- Accepted Date: 09 Dec 2024
- Publication Date: 12 Dec 2024

Keywords

Digitalization; Artificial intelligence; Workplace well-being; Behaviour change; Motivation; Job satisfaction

Abstract

Background: *Digitalization and artificial intelligence technologies are navigating and strengthening human labour practices and organizational performance in healthcare. Research has shown that digitization and AI can help healthcare professionals through real-time insights and recommendations derived from extensive datasets. These modern technologies are advancing beyond being mere instruments in the health sector, now acting as partners to aid healthcare professionals in making better predictions and decisions by offering timely insights and suggestions derived from extensive datasets, as well as pinpoint potential health issues with greater accuracy and speed. It is estimated also that significantly can be supported the management of workplace well-being.*

Objective: *This article delves into how AI and digitalization help healthcare professionals by boosting efficiency, meeting their professional and personal needs, and showcasing how they can enhance employee mental health and well-being.*

Results: *It is crucial to recognize that issues arise from the intrinsic complexity and opaque nature of AI, the risk of job loss, and the disruption of the conventional interaction between physicians and patients. Nonetheless, AI in the healthcare facilities should not be seen as a danger to human employees. Instead, AI strive to support healthcare employees, enabling them to allocate more time to complex and crucial tasks. By automating tasks that are repetitive and mundane, these new technologies can lessen the burden on healthcare professionals, allowing them to dedicate more time to caring for patients and engaging in valuable interactions.*

Conclusions: *The integration of AI and digitalization technologies into healthcare presents both opportunities and challenges for employee motivation and job performance. Although it can improve effectiveness and lower stress levels, it is important to carefully address worries about employment stability and maintaining personal connections in healthcare. Organizations need to prioritize creating a workspace that encourages and assists employees in adjusting to new technological changes.*

Introduction

Healthcare systems are encountering never-before-seen challenges due to shifting demographics, increased administrative demands, growing morbidity rates, and evolving technology needs [1]. Organizations and professionals in healthcare are expected to provide services, medications, and treatments that promise positive outcomes, many of which involve some level of risk or uncertainty. Healthcare professionals (HCPs) are experiencing a range of job-related pressures such as heavy workloads, administrative duties, limited social support, uncertainties about patient care, and a tendency towards emotional reactions, which makes it hard to adjust to changes. In addition to their goal of healing, physicians should focus on building trust with patients as they navigate the intricate mix of procedures and risks in their work. When faced with these scenarios, the lack of capability to interact with and manage large amounts of data, known as big data, causes them to rely on intuition, expert advice, or personal caution, disregarding collective advantages for individuals [2]. Nevertheless, artificial intelligence (AI) and digitalization techniques are naturally suited to effectively aid in understanding and using large amounts of data, as well as to derive insights and create decision-making tools from healthcare data. AI has the ability to improve the exchange of information in healthcare settings such as hospitals and primary health centers, resulting in greater efficiency in providing healthcare. Advanced algorithms in the form of AI can be integrated into smart watches, allowing healthcare professionals to input and monitor health data. Ultimately, this improves uniformity in wards and hospitals because healthcare providers can quickly access information, reduce errors, and improve care processes, availability, patient experience, and outcomes, while also reducing healthcare

Citation: Karaferis D, Balaska D, Pollalis Y. Digitalization and Artificial Intelligence as Motivators for Healthcare Professionals . Japan J Res. 2025;6(3):103.

costs and enhancing patients' understanding of their care [3-7].

Despite the continually growing interest in digitalization and AI, and research on, there are evidences to show that the potential of its use in healthcare do not always meet organizations' expectations. Multiple healthcare institutions invest time and resources in innovative technologies, only to be disappointed by the lack of positive outcomes [8, 9]. An array of obstacles, such as worries over AI system performance, compatibility issues with current technical setups, healthcare professionals' reluctance to accept AI-based diagnoses, negative perceptions within the healthcare field, and time limitations hindering the adoption of AI systems. Additionally, AI is instilling worries about a loss of jobs and a lack of confidence among certain healthcare providers, particularly in the nursing sector, regarding AI's capacity to provide individualized patient care for less money. As a result, employees may experience feelings of uncertainty and develop unfavorable perceptions, engagement, and motivation, ultimately impacting their performance [10-12].

Utilizing digital and AI technologies involves more than just technical modifications; it necessitates a multifaceted adaptive change in human capabilities, work organization, and legal and financial structures for successful transformation. No maps have been made for navigating this difficult and unfamiliar terrain yet. Yet, previous studies have shown that the level of motivation in employees is directly connected to the success of an organization. Work motivation is defined as a mix of internal and external factors that impact how individuals act and perform in their jobs. There is a common belief that the motivation of healthcare providers positively impacts the quality of patient care within hospital settings. Therefore, the main concentration of AI studies in business management is on the partnership between AI tools and healthcare experts [13, 14]. In this vein, the primary aim of this study was to investigate how introducing creative and digital methods affects the responsibilities of healthcare professionals and how these methods can also boost the motivation of healthcare providers at the same time. Last but not least, what developing strategies should decision-makers adopt to create long-lasting behavioral changes that result in new AI utilization, in order to achieve organizational objectives.

Methods

Purpose of the study

The article aims to discuss how AI and digitalization are changing the responsibilities and job structure of healthcare professionals, as well as how AI can improve the motivation of healthcare providers. Additionally, healthcare managers owe to teach healthcare professionals how to use AI effectively and achieve organizational objectives through creating strategies and offering educational options. At present, there is a shortage of theoretical frameworks that center on the motivation of healthcare professionals towards these technologies. Hence, the purpose of this paper is to set the groundwork for a theoretical framework to be applied in upcoming research endeavors.

Material and analysis

The study utilized literature on artificial intelligence and digitalization in patient healthcare professionals' motivation and involvement. How well the publications' methodologies aligned with the subject matter dictated their validation and qualification. The literature review involved utilizing specific databases and digital journals such as Scopus, PubMed, Elsevier Direct, Medline, EBSCO, CINAHL, PsycINFO, and Web of Science. Information sources were located by conducting keyword searches in databases, online repositories, and digital libraries, taking into account the publication date, author, and type of article. The literature selected included research articles considered essential for addressing the research questions raised in this study.

Results

AI and Digital driven workplace as motivators

There are numerous advantages are linked with digital and AI technologies, including improved efficiency, faster and accurate results, reduced errors in processes, and more successful strategic outcomes at the organizational level, which is why they can serve as motivators for healthcare facilities. Employee motivation is defined as the employee's willingness to put in effort to complete their work tasks. Motivation of employees significantly influences the performance of both individuals and work groups. Indeed, the performance of an employee is greatly influenced by the level of motivation and effort they put into their work. This has been specifically emphasized in studies examining social loafing or the act of withholding effort. Motivation is also linked to job satisfaction and retention within work groups. Overall, motivation plays a crucial role in determining significant employee results. Therefore, all healthcare providers must have the capability to utilize digital technologies for accessing information, receiving automated assistance, and communicating with patients and colleagues in the sector, among other functionalities [13,15-17].

Development and Enhancement of Skills

Skills and expertise refer to the particular knowledge, abilities, and skills that individuals or teams have in a specific area or industry. Artificial intelligence is a complicated concept that necessitates a comprehensive comprehension of its functionality and application in medical diagnosis. By improving their digital skills and knowledge of AI, HCPs participating in the AI implementation process can better address any issues that come up. Furthermore, AI can support HCPs in staying informed with recent medical research and guidelines through tailored content suggestions. AI-driven platforms can examine healthcare professionals' browsing habits and areas of interest to offer tailored learning options and materials [18].

Utilizing AI-powered virtual reality simulations in medical training offers significant benefits by providing a secure learning environment for students to improve their clinical skills before practicing on real patients. Especially, this method facilitates training in typical situations like suturing or performing physical exams, and in allowing for readiness for infrequent but possibly significant catastrophic occurrences. While also have been shown to be effective in delivering comprehensive understanding of surgical procedures. Studies have demonstrated that it is possible to simulate Operating Rooms using AI technology, effectively assessing healthcare providers' responses to emergencies and offering appropriate training for handling these unique scenarios with safety and efficiency. Since users can repeat each step multiple times with this technology, which is not possible in real-life scenarios, it will benefit future medical professionals in clinical practice and in mastering human-machine interaction, a crucial skill for the future [19-21].

Decision-making support and predictive analytics

AI and machine learning (ML) progress can aid healthcare professionals improve their decision-making through offering instant insights and recommendations derived from extensive

data. Enhancing the accuracy of clinical diagnoses with AI in medicine is appealing because it can enhance patient outcomes by detecting medical conditions early and accurately, leading to lower readmission rates, preventing chronic illnesses, and improving prognosis with fewer complications. AI algorithms can examine various medical data types such as electronic health records (EHRs), medical imaging data, genomic data, laboratory results, and health information exchange (HIE) platforms to assist healthcare providers in detecting abnormal patterns and making evidence-based decisions [22,23]. Numerous researches demonstrate that AI systems can assist healthcare providers in improving diagnosis and prognosis, while also providing personalized and customized information. Moreover, they have also been proven to predict the likelihood of sudden suicide attempts accurately, and they have been used to assess the probability of patients facing serious illnesses or being transitioned to palliative care. AI-powered risk evaluation plays a crucial role in numerous efforts, pinpointing patients who are at risk of adverse outcomes and preventing such outcomes is vital for enhancing high-quality care provision [24-26]. Additionally, artificial intelligence has the capability to offer immediate suggestions and information to healthcare professionals using medical standards and proven methods. The various digital and AI technologies available significantly enhance healthcare professionals' ability to interpret and analyze data, leading to improved diagnosing, treatment planning, error reduction, and patient management with increased precision and efficiency [27].

Remote or Hybrid Work

Healthcare organizations have increased the use of remote work and hybrid models (combining remote and office work) in administrative positions due to the Covid-19 pandemic to prioritize safety. Guidance from health organizations like the World Health Organization (WHO) influenced the safety measures, highlighting the significance of maintaining physical distance as a crucial safety measure. Because of social distancing guidelines and health safety protocols, many administrative healthcare professionals had to quickly transition to working remotely. Furthermore, in many cases rural and underserved areas often encounter difficulties in both attracting and retaining healthcare professionals. Digitalization has made it possible for healthcare professionals to work outside the traditional office setting, such as from home or other locations, while also promoting successful remote work setups and improving employee productivity and well-being. Typically, professionals have a sense of duty and eagerness to respond to their managers, driven by the belief that they are more easily reached and present when working from home. Furthermore, decreasing commute time between home/work and work, as well as minimizing the chance of getting injured during the commute. As a result, it helps create a better equilibrium between work duties and personal life, giving employees more independence in how they carry out their tasks [28,29].

Administrative burden and workflow optimization

Despite the widespread adoption of health information technology, healthcare is still burdened by excessive paperwork and manual procedures. Heavy administrative burden faced by healthcare providers, is an obstacle that drains resources, increases costs, and reduces the time professionals have to care for patients. Approximately half of the time spent by physicians in their offices is devoted to administrative tasks rather than providing care to patients. In the same way, nursing staff and other healthcare employees in hospitals typically spend multiple hours each day transferring patient data for the next shift. This not only takes away time that could be spent on giving direct patient care, but it also opens up chances for mistakes. AI has the potential to improve the efficiency of clinical processes by automating common tasks, organizing tasks by importance, and forecasting patient results. Healthcare professionals must acquire digital competencies such as knowing how to utilize AI-based tools for task prioritization, automation, and predictive analytics to enhance workflow efficiency and patient care coordination [30,31].

Emotional Support and Counseling

AI has the capability to offer emotional guidance and assistance to employees facing challenging circumstances. Artificial intelligence-driven chatbots and messaging apps can be employed to offer emotional support and counseling to staff members. Approximately 20% of employees globally are dissatisfied, with 25.6% of physicians encountering burnout symptoms. Additionally, 60% face emotional detachment at work, leading to decreased energy, motivation, and work effort, as well as cognitive fatigue and emotional depletion. Employee stress levels at work have been consistently rising in recent years, now peaking at a record high of 44%. This underscores the urgent need to enhance job satisfaction and general well-being [32,33].

Burnout in healthcare employees is caused by doctors struggling to stay updated on new medical advancements because of the overwhelming volume of information to absorb. This condition could have adverse effects on both the mental well-being and the effectiveness and safety of patient care. In order to reduce burnout and improve the well-being of HCPs, it is crucial to address the causes of burnout such as excessive workloads and burdensome administrative tasks. Healthcare professionals experience provider burnout as a result of ongoing stress caused by emotional exhaustion, declining mental health, and feelings of depersonalization attributed to systemic and organizational factors [34].

AI-driven systems can provide valuable emotional support and resources to employees. Chatbots and virtual assistants with natural language processing can have empathetic discussions, provide coping methods, and recognize indicators of mental health problems. Anonymity and privacy are significant advantages as well, with AI-driven systems offering a secure environment for professionals to express issues and receive assistance, free from concerns about being judged or facing stigma. If they believe their privacy is ensured, they are more likely to feel assured and take full advantage of the available help. This establishes a secure and convenient environment for employees to seek assistance, decreasing stigma and enhancing overall wellness [35].

Virtual Health Coaches

AI-driven chatbots and virtual assistants will serve as personalized health coaches, available for employees 24/7 based on their individual needs. Mobile apps and wearables track and control health information, such as mental well-being, in a customized and smooth way that can help create successful workplace health initiatives. Moreover, AI-driven analytics will provide organizations with valuable insights into the well-being of their workforce. By collecting and examining anonymous employee information, companies can uncover trends, patterns, and opportunities for enhancement in their employee well-being initiatives and help create a more satisfied and healthier

staff. These observations allow organizations to make decisions based on data, allocate resources efficiently, and consistently improve the well-being programs they provide. Also, have the ability to guidance, answer questions, and offer motivation and encouragement on various aspects of wellness, including ergonomic advice, preventing work-related injuries, exercise, stress management, and mental health. AI algorithms can assist employees in managing their health by detecting potential health risks early through predictive modeling, enabling them to take proactive measures before more serious problems occur. This can lead to decreased healthcare expenses and absenteeism, while also enhancing employee effectiveness and tenure [36,37].

Challenges and anti-motivators for AI adoption in the healthcare sector

Although AI brings advantages to the healthcare sector, several challenges remain in encouraging medical personnel to embrace AI. Significantly, the hesitation of healthcare professionals, concerned that the continuous digital transformation might lead to being supplanted by AI, has caused substantial stress. This, along with the rising skill demands needed to handle extra and unforeseen work responsibilities, has decreased their engagement with AI expectations. Nevertheless, the absence of comprehension, along with skepticism about technological progress, could impede the integration of AI in the healthcare sector [38,39].

Perception of risk and uncertainty as anti-motivators for AI adoption

As digital and AI innovations have altered HCPs' methods, some see the opportunity for improvement in quality and cost-effectiveness, many others view them as risky or struggle to adapt due to lack of knowledge in the information science behind these new tools. Several contextual factors may impede the adoption and implementation of AI and digitalization technologies in the healthcare industry, as well as their effects on workforce planning. These challenges have caused a decrease in trust in AI-driven solutions among important parties like healthcare providers, patients, and regulators, hindering their potential adoption [10, 40].

Job displacement in healthcare sector

Certain research has shown that one significant challenge in integrating AI into healthcare is the main concern it creates for HCPs, as AI may eliminate certain healthcare roles and impact the relationship between providers and patients. Moreover, certain forecasts indicate that, in the upcoming future, AI technologies might surpass human medical professionals in surgical procedures. Moreover, AI has been integrated into the nursing sector, posing challenges for nursing staff in terms of providing personalized patient care at a reduced cost [10, 41, 42].

The inherent complexity and the black-box characteristic of AI

Although AI excels in efficiently completing routine tasks, it frequently requires physicians to handle cases that are more complex and challenging. While this change could provide mental engagement by involving healthcare employees in complex medical issues, the constant exposure to stressful situations without the relief of easier responsibilities may unintentionally worsen burnout. The ongoing need to address challenging cases and mysterious health conditions that are hard for healthcare professionals to understand, making it tough to explain the reasoning behind diagnoses and treatments and possibly restricting the adoption of suggestions. Between 30 and 70% of health providers, depending on the specific study and professional category, acknowledge lacking the necessary skills to effectively utilize digital technologies and engage with digital information [43-46].

Since now, it appears that artificial intelligence surpasses other technologies in the healthcare field due to its ability to learn from actual data without human intervention. AI in healthcare creates decision-making algorithms that are difficult to explain and requires consistent updates through automatic processes. This presents a difficulty with regards to regulation. Legal authorities, medical professionals, and healthcare services are required to offer medical care that is both safe and of a high quality [47]. Obviously, AI tools should inherently help by scoring risks and assessing probabilities, generating confidence in the recommended action. Nonetheless, because of the intrinsic complexity and the black-box characteristic of AI, it only brings about a fresh array of unassessed dangers. The physician assessing the algorithm's results needs to confirm that the system has come to a conclusion consistent with medical expertise. In general, it is important to question the AI about the reasoning behind its conclusions and comprehend the logic it used, especially in sensitive contexts. Undoubtedly, it is essential for physicians to understand the process of making predictions and decisions. Their importance is stated as being their trust and acceptance in AI. If not, AI systems could decrease job enjoyment and commitment over time, as the range in task complexity, which is often tied to how long someone stays in a career, decreases. Furthermore, concerns regarding the comprehensibility of AI systems can worsen these inclinations, impeding healthcare professionals' capacity to interact effectively with patients and make well-informed choices [48-51].

Disturbance of the traditional relationship between physicians and patients

Clinicians and hospitals are already utilizing AI systems for clinical and operational decision-making. This can be observed in areas such as risk prediction, discharge planning, diagnostics, and decision-support systems. For the first time, AI may alter the traditional connection between healthcare professionals and patients, which brings up ethical, legal, and financial issues. Despite the clear potential of AI, there is a significant unknown factor regarding how it will affect healthcare practice, specifically the relationship between physicians and patients. AI technologies have expanded the scope of medical knowledge beyond just professionals and researchers, allowing for a combination of public and private, professional and non-professional, and human and technological involvement in healthcare. Healthcare professionals must gain expertise in engaging with AI systems to ensure effective healthcare delivery. In addition to their healing role, physicians should prioritize building patient trust amidst the various procedures and risks involved. Some patients prefer a more personal interaction and do not want to alter the traditional physicians-patient dynamic. In order for AI to be successfully implemented in healthcare, it is essential to earn the trust of the public [5, 52, 53].

Loss of decision-making autonomy of physicians

Physicians nowadays are facing a reduction of autonomy in medicine, in the context of increasing pressures around patient volumes or throughput, and medical decision-making. Autonomy in healthcare involves being able to carry out various

tasks independently, such as driving innovation by taking risks to help a patient. If physicians do not have autonomy in the workplace, they may not be inclined to improve their impact on organizational performance. Researchers believe that autonomy may be jeopardized when health systems implement new ideas or adhere to top-down or command and control approaches. As such, it is believed that decisions made by algorithms that carry values can also endanger autonomy. In point of fact, physicians possess expertise and abilities that enable them to assist individuals in precarious life circumstances. The bond between physicians and patients involves reciprocal ethical responsibilities from both parties. However, possessing significant power requires taking on moral and occasionally legal responsibilities. It is the responsibility of the physician to make sure that the provision of medical care and services is structured in a way that focuses on the patient's health and wellness, while using their expertise and abilities in a safe and efficient manner. This necessitates the physician having the authority to make decisions. Till now, numerous papers have been published, noting that the perception or actual loss of autonomy is a negative contributor to clinicians' well-being. Another critical concern is the excessive dependence on AI, as there are concerns that healthcare providers might rely too much on AI tools, leading to a potential decrease in critical thinking skills and clinical decision-making [54-56].

Safety and liability issues

AI algorithms' safety and behavior are potential barriers to their full adoption in the healthcare sector, since the regulations around AI in healthcare are still developing. Critically, there is a lack of case law regarding injuries caused by AI, creating confusion over who is responsible for errors with AI technology. This involves issues like software bugs, incorrect usage by medical professionals, or failures in AI-powered medical equipment. Moreover, physicians' responsibility with generative AI systems relies on the level of care, which entails following recognized medical procedures. If using AI-generated information is considered a violation of this standard, physicians could be held legally responsible. Conversely, if AI gains widespread acceptance and is subject to regulations, the threshold for liability could change. Furthermore, healthcare organizations could be held vicariously responsible for their employees' use of AI tools on a different scale. This adds complexity to the legal situation by causing uncertainty about the level of responsibility that should be divided between healthcare providers and AI developers. Therefore, it is crucial to take into account informed consent, cybersecurity, data protection, algorithmic behaviors, safety, and other regulatory barriers when incorporating AI in healthcare. This problem also needs greater focus in public and political discussions [57, 58].

Discussion

The potential for improving workplace wellbeing through digital and AI technologies in the future is huge. These advancements offer never-before-seen levels of customization, constant supervision, and emotional assistance. Through the use of AI technology, organizations have the ability to create personalized strategies with ongoing monitoring, predictive analysis, extensive wellness initiatives, virtual coaching, counseling, and stress management sessions. This fosters engagement, enables employees to manage their well-being effectively, and cultivates a healthier, more efficient workforce. Similarly, past studies indicated that efforts to enhance workplace health, safety, and well-being resulted in higher levels of employee job satisfaction, loyalty, and motivation. Safety and health initiatives in the workplace were found to have a strong correlation with increased and improved productivity [59,60].

Notwithstanding the progress made in AI technology, it still lags behind humans in various tasks, particularly those involving responding to human emotions and social cues, or emotional tasks in general. The increased capacity of AI to tackle cognitive tasks instead of emotional ones has resulted in a growing need for employees proficient in emotional tasks, with the healthcare sector being a notable example. Consequently, emotional tasks such as working with patients and maintaining relationships are growing in importance across different fields, surpassing cognitive tasks for human employees. Therefore, healthcare organizations should not forget about their most valuable asset, their employees whose roles are being automated, in their rush to benefit from the efficiency advantages of using AI. Viewed through a human-centered lens, this trend already has rightly already raised concerns, as a focus on technology can have adverse effects on people, such as decreased job satisfaction, motivation, and mental well-being. Therefore, it is important to prioritize employees over AI to guarantee the success and sustainability of AI adoption projects [20,61-63].

The use of AI in healthcare offers distinct chances to stimulate motivation among healthcare professionals. In order to tackle the obstacles, hurdles to changing behaviors and factors that discourage AI brings to the dynamic of healthcare workforce, it is essential for health systems to put in place motivational strategies, such as:

- Continuous training and education, as offering thorough instruction in utilizing AI tools is crucial for boosting confidence and skill level in healthcare professionals. HCPs should keep themselves informed about the most recent advancements in AI technology and its uses, as the healthcare industry is constantly evolving. Institutions and healthcare organizations can offer training and development for their staff to effectively utilize AI in their daily responsibilities. Medical education needs to adapt in order to train future healthcare practitioners for handling additional responsibilities and handling technical duties. In addition, medical schools need to adjust in order to equip students with the necessary knowledge and skills to succeed in today's technology-driven environment, while also highlighting the distinct human talents that set physicians apart from machines. Educating upcoming doctors on how to engage with this technology is crucial. Physicians may be more receptive to the transition, as they will be collaborating with digital transformation without worrying about job security [64-67].
- Involvement in AI Development, heightening the participation of healthcare professionals in the progress and application of AI and digital technologies can significantly boost their motivation. Staff members' participation in developing AI tools enhances their feeling of ownership in their work procedures, ultimately elevating their AI self-confidence and reducing AI stress. This comprehensive approach assists professionals in cultivating a positive attitude towards utilizing AI, as they perceive their contribution as valuable and see themselves as actively molding tools that meet their needs [68-70].
- Creating a culture of trust and transparency, as building trust in AI and digital systems is vital for motivating healthcare professionals. Organizations should focus on transparent

communication regarding how AI technologies work, their benefits, and about the values underpinning AI applications can foster a culture of trust and encourage greater acceptance and enthusiasm for these tools. Being transparent about the process and clarifying the system's functionality can help bridge the gap between introduction and adoption. Therefore, having a combined data and AI platform is essential for achieving transparency and explainability. Transparency offers a comprehensive understanding of how the AI system operates, while explainability explores the rationales for particular decisions or results. Moreover, combining data workflows and AI processes guarantees smooth monitoring, validation, and record-keeping, enhancing adherence, confidence, and responsibility across the AI cycle. In addition, it is crucial to establish a setting where AI complements human abilities instead of taking them over, to guarantee equitable pay and acknowledge healthcare providers in order to reduce the perceived risks of AI [67, 71].

- Stringent policies and regulations, have the ability to strongly influence behavior. The increasing discussion on the bias of AI systems has led international institutions and governments to create rules for the advancement and application of these technologies in decision-making environments. Numerous current and emerging regulatory frameworks require the examination of bias in AI, either through their broad reach or by directly focusing on the technology or idea. Having supervision and taking proactive measures to correct bias in AI applications is crucial in order to prevent the possibility of unfairness. This will allow AI technologies to progress in promoting health equity, enhancing access to healthcare, improving patient care, and adequately supporting the dynamics of the healthcare workforce [72, 73].
- Operationalize Ethical Considerations, by developing a framework for ethical risks involving AI and data can effectively minimize ethical problems. It includes a system of governance that must be preserved and it specifies the ethical norms that must be complied with or observed. Ethical AI must adhere to principles including fairness, trustworthiness, safety, confidentiality, protection and inclusivity in order to ensure transparency and accountability. Undoubtedly, the Ethical AI framework needs to provide high-level guidance on how to integrate and embody these fundamental principles of Ethical AI in their systems. Understanding the ethical implications and ensuring responsible AI usage are essential to maintaining trust in the healthcare sector [72, 74].
- Fostering a culture of Adaptability and Innovation, as in order for an organization to be able to cope with the ongoing changes in the healthcare landscape, it must be open to change and innovation, as such adaptability is a valuable attribute for successfully navigating these changes. Fostering a work environment that values innovation can inspire healthcare professionals. Engaging them in both the creation and execution stages of AI technologies facilitates input and adjustments that cater to their specific requirements and perspectives. This method involving everyone improves both job contentment and guarantees practical and efficient solutions [75].
- Collaborative development, as the successful implementation of AI solutions often depends on cooperation between different parties, including physicians, data analysts, and technology professionals. One of the primary obstacles to incorporating AI is the lack of collaboration between AI specialists and IT staff. AI experts typically concentrate on the functionality and capabilities of AI solutions, whereas IT teams are more interested in how those solutions integrate with the current technological ecosystem. Lack of teamwork, conflicting priorities and unclear expectations can result in inefficient execution, missed chances and can lead to delayed projects, conflicting priorities, or subpar AI results within organizations. By making use of a variety of skills, organizations can develop highly efficient AI solutions that seamlessly fit into current processes. This method boosts innovation and guarantees the practicality and benefits of AI applications in real-life scenarios. Additionally, working together enhances technology and fosters trust among providers in the effectiveness and dependability of AI systems [76].
- Addressing gender differences in engagement, as understanding how male and female healthcare providers interact with AI differently can help create personalized motivation approaches. Studies suggest that AI technology could offer more benefits to female healthcare professionals, who frequently handle complex, non-routine duties requiring cognitive skills like empathy. Customizing strategies according to the unique needs of each gender can boost overall motivation within a variety of teams [77, 78].
- Strengthening autonomy, as writers recount that excessive monitoring in healthcare institutions leads to lower job satisfaction and decreased effectiveness among professionals. In this scenario, companies can enhance professionals' feeling of individual accountability by fostering inclusive corporate environments that enable them to utilize their critical thinking abilities and motivation to accomplish specific goals. AI will help medical professionals become more self-sufficient by aiding in different aspects such as time-saving and streamlining decision-making procedures [79].
- Leveraging patient support, it is known that the interaction between healthcare providers and patients has a significant impact on motivation levels. Making sure that patients are in favor of the utilization of AI in treatment procedures can improve the job performance and satisfaction of healthcare professionals. Healthcare professionals are more encouraged to use AI technologies when they observe positive patient outcomes associated with their use [77, 80, 81].

Ultimately, organizations need to have the correct values, tools, and communication skills in order to guarantee the legal, ethical, and safe design and use of AI systems. This article focused on leveraging insights from motivational and social psychology in order to develop effective motivation strategies. Researchers need to study how supportive motivation strategies can help promote lasting behavior changes in the AI healthcare sector, moving away from authoritative instructions, and aligning with principles of transparency and fairness. Inspiring HCPs to prioritize fairness through intention can serve as a driving force for both personal and larger societal transformations. Nevertheless, in order for these motivational tactics to be most efficient, we suggest that they also take into account and

integrate the factors that are supporting or hindering the desired change in behavior. Therefore, they must take into account the current norms and habits of the specific environment, as well as any barriers and motivators for changing behavior. Values do not operate independently, but rather within the context of an organizational and larger societal framework.

Conclusions

Debatably AI and digital technologies are necessary in the healthcare sector as they can lead to rapid, precise, and accurate patient diagnoses. With the continuous progression of AI, the healthcare sector may see a potential transformation in its capabilities. Incorporating AI into care provision will help boost efficiency and enhance the quality of specific services, resulting in a greater amount of care being delivered. AI should not be viewed as a replacement for healthcare professionals, but rather as a complementary resource in healthcare. It collaborates with providers to analyze data, reduce administrative duties, improve patient engagement, offer diagnostic assistance, and save time in providing care through personalized approaches. Healthcare professionals can utilize their distinct abilities in compassion, intricate decision-making, and hands-on patient engagement, which artificial intelligence cannot replicate, by effectively integrating AI. Justifiably so, AI empowerment and digitalization are increasingly recognized as pivotal factors in improving the motivation, job satisfaction, and performance of healthcare professionals, particularly physicians and nursing staff. Even more, instead of removing jobs, AI is more apt to change them, directing healthcare providers' focus toward tasks that enhance AI technologies.

However, it is important to recognize that alongside the thrilling progress and various benefits of AI and digital technologies, there are obstacles that must be addressed. Among the main users of AI, the lack of confidence has predominantly a physician's perspective. Most AI-based methods aim to automatically find new knowledge or build decision support tools derived from healthcare data. Additionally, AI can influence the actions of individuals and decision-makers by controlling the flow of information. Yet, the innate human instinct and traditional discernment, which prioritizes understanding over forecasting, still hesitate to embrace AI influence in decision making. The ethical relationship in the doctor-patient interaction, where treatment is based on the doctor's knowledge of the patient's circumstances over time and in context, is challenging to replicate in interactions with AI technologies. The presence of AI does not change the patient's role, the reasons for seeking medical assistance, nor the patient's susceptibility. Instead, what changes are the way care is given, the delivery of care, and the individuals providing care. In the future, AI has great potential in healthcare but will require continuous research, collaboration across disciplines, and clear communication between AI developers, medical professionals, and ethical/legal experts to fully realize this opportunity. By combining AI's skills with the human touch of healthcare providers, patient treatment can be personalized, improved, and streamlined.

Considering the above, healthcare professionals will greatly rely on AI and digital technologies, robotics, and intelligent systems to enhance their performance and maintain high-quality care standards. This will involve managing resources efficiently, optimizing HR, developing new skill sets, and reshaping the workplace, leading to profound impacts on their employment and professional life quality. The need for these technologies will become even more noticeable in the future.

Declaration of Interest

The authors declare no conflict of interest.

Conflict of Interest

Each author declares that he or she has no commercial associations (e.g., consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

Funding

None

Author's contribution

Dimitris Karaferis is the first author of this manuscript. All authors were involved in all steps for preparation of this article, including final proofreading and gave final approval of the version to be published.

Assessment in Student-Centered Learning

Traditional assessment methods, primarily focused on rote memorization and standardized testing, fail to capture the complexity of future competencies. Alternative assessment strategies, including portfolios, project-based evaluations, and rubrics, have been proposed to measure skills such as critical thinking and problem-solving [11,12].

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