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REVIEW

Artificial intelligence in health care management: ethical challenges, benefits and opportunities

Inteligencia artificial en la gestion de servicios de salud: desafios eticos, beneficios y oportunidades

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ABSTRACT

Introduction: artificial intelligence is transforming healthcare management by improving the efficiency and personalization of care. Therefore, the objective was to describe how artificial intelligence is integrated into healthcare management, as well as the ethical challenges that exist in its application and the administrative opportunities it offers.
Method: a qualitative, descriptive and literature review type study, 30 articles were analyzed, selected by convenience sampling according to the fulfillment of eligibility criteria. The information was obtained from scientific databases such as Scopus, SciELO, and PubMed, and was organized in an Excel matrix for subsequent evaluation using the CASPe method.
Development: artificial intelligence in healthcare offers benefits such as efficiency, personalization of care and improved diagnoses. However, it faces ethical challenges such as privacy, lack of regulation and risk of dehumanization. Its implementation requires investment, a clear legal framework and an ethical approach.
Conclusion: AI optimizes the management of health services through data analysis and medical decision support, although its adoption presents challenges such as the absence of regulations, high costs, unequal access and ethical concerns. Therefore, it is essential to develop regulations and protocols that guarantee a fair and responsible use in its application in the quality of care.

Keywords: Health Management; Artificial Intelligence; Health Services.

RESUMEN

Introducción: la inteligencia artificial transforma la gestión en salud al mejorar la eficiencia y personalización de la atención; por lo que, se planteó el objetivo de describir como se integra la inteligencia artificial en la gestión de servicios sanitarios, así como los desafíos éticos que existen en su aplicación y las oportunidades administrativas.
Método: estudio cualitativo, descriptivo y de tipo revisión bibliográfica, se analizaron 30 artículos seleccionados según el cumplimiento de criterios de elegibilidad. La información se obtuvo de bases de datos científicas como Scopus, SciELO Y PubMed, esta fue organizada en una matriz en Excel para su posterior evaluación a través del método CASPe.
Desarrollo: la inteligencia artificial en salud ofrece beneficios como eficiencia, personalización del cuidado y mejora en diagnósticos. Sin embargo, enfrenta desafíos éticos como la privacidad, falta de regulación y riesgo de deshumanización. Su implementación requiere inversión, marco legal claro y enfoque ético.
Conclusión: esta optimiza la administración de servicios de salud mediante el análisis de datos y apoyo en decisiones médicas, aunque su adopción presenta retos como la ausencia de normativas, costos elevados,

desigualdad en el acceso y preocupaciones éticas. Por ello, es fundamental el desarrollo de regulaciones y protocolos que garanticen un uso justo y responsable en su aplicación en la calidad de los cuidados.

Palabras clave: Gestión en Salud; Inteligencia Artificial; Servicios de Salud.

INTRODUCTION

The current technological revolution is transforming different scenarios, with health being one of the areas with the most significant impact. In this regard, the World Health Organization (WHO) states that technology used ethically and efficiently enables the optimization of resources and the management of public health services. However, its implementation presents ethical risks related to data protection and the potential dehumanization of patient care.[1]

In this regard, artificial intelligence (AI) has impacted various aspects of human existence. The WHO emphasizes the importance of AI in healthcare, particularly in enhancing diagnosis and disease detection, as well as in medication management. This enables patients to have control over their medical care, which facilitates better service management, protocol handling, and research development.[2]

It is worth noting that, in the field of health, it is presented as a technological tool that assists in everyday activities for the benefit of the community. This is particularly relevant considering that health systems face high demand for services, a shortage of specialist professionals, and supply management issues. Therefore, the integration of AI emerges as a promising alternative to optimize management in the health sector, providing personalized care and applying scientific criteria in the provision of services.[3]

That is why AI in healthcare presents potential solutions to some of the challenges facing healthcare systems worldwide. However, there are gaps in its implementation and innovation, as well as resistance from healthcare leaders to the use of new technologies that compromise the autonomy of healthcare professionals in decision-making and the confidentiality of privacy-focused data.[4]

For this reason, public management of healthcare services faces challenges regarding the link between citizens and service provision, due to demands for greater transparency, efficiency, and equity, focused on the adoption of new technologies such as robotics and AI, where uncertainty revolves around when the ethical dilemmas of replacing people in their jobs will be addressed.[5]

Consequently, the use of AI in the healthcare sector must be approached from a multi- and interdisciplinary perspective, involving other professions and political aspects within a legal and human rights framework about decision-making on quality care that guarantees human dignity.[6]

In this context, this technology not only optimizes operational processes but also redefines disease diagnosis, clinical decision-making, and treatment personalization. Unlike traditional systems, which rely on manual processes and struggle to handle large volumes of data, AI enhances accuracy and efficiency in these areas. The applications of AI in healthcare administration are expanding, with notable benefits in several key areas, thereby improving the quality of medical care and enabling more effective responses to patient needs.[7,8]

Similarly, it enables tasks to be performed more efficiently and at a reduced cost, considering that preventive care, promoted through applications, can empower consumers to manage their health and well-being.[9,10]

Therefore, it plays a fundamental role in this new paradigm of clinical management at different levels of care, with electronic health records improving medical care as an advance. The essential aspect is the correct incorporation of this technological tool into public health systems, considering the ethical, human, and ontological dimensions.[11,12]

The literature reviewed above highlights the inherent need to explore the use of AI in healthcare administration in greater depth. Therefore, the objective of this study is to describe how artificial intelligence is integrated into healthcare management, as well as the ethical challenges that exist in its application and the administrative opportunities it offers.

METHOD

The research employed a qualitative approach that focused on analyzing and synthesizing information on artificial intelligence in health management to identify common patterns in the phenomenon under study. A descriptive design was employed to specify the properties and characteristics of the study object. Similarly, a bibliographic or documentary review made it possible to analyze, synthesize, and evaluate the existing information, as well as its organization, which focused on the research questions that allowed for a deeper understanding of the particularities and generalities of the object of study.[13]

The population is a set of study components with common characteristics; it consisted of 110 articles derived from indexed sources, with a sample of 30 articles selected based on accessibility and compliance with the eligibility criteria detailed below.

Inclusion criteria:

- Original articles of a quantitative, qualitative, or mixed nature, from peer-reviewed journals.
- Articles in English, Spanish, or Portuguese.
- Published within the last 5 years.
- Studies addressing the application of AI in the administrative and healthcare management of care services.

Exclusion criteria:

- Studies from the gray literature.
- Clinical trials and review articles.
- Undergraduate and postgraduate theses.
- Experimental studies.

The information was collected from April 2024 to June 2025 by a researcher using indexed databases such as SCOPUS, SCIELO, CINALH, PUBMED, and REDALYC, incorporating keywords in English (artificial intelligence; management; health services; quality of care), Spanish (inteligência artificial; gestión; servicios de salud; calidad del cuidado), and Portuguese (Inteligência artificial; gestão; serviços de saúde; qualidade dos cuidados), as well as Boolean operators (AND and OR). quality of care), Spanish (inteligencia artificial; gestión; servicios de salud; calidad del cuidado), and Portuguese (Inteligência artificial; gestão; serviços de saúde; qualidade dos cuidados), as well as Boolean operators (AND and OR). This was validated by another researcher, who verified compliance with the selection criteria.

On the other hand, the data were entered into an Excel spreadsheet for recording, including information on authors, year of publication, abstract, method, findings, conclusions, and references, which allowed the studies to be organized according to the questions posed.[14]

The CASPe method was used for analysis, which enables a critical reflection on the quality of the selected articles by evaluating them against the checklist presented as an evaluation rubric for the components and styles of the studies.

DEVELOPMENT

Ethical challenges presented in the integration of artificial intelligence in service management.

The WHO recognized the value of AI during the COVID-19 crisis, highlighting its use in managing the pandemic and focusing on principles for its responsible use, including autonomy, security, transparency, accountability, equity, and sustainability. However, its application is questionable due to concerns about data privacy.[15]

AI also has the potential to transform healthcare by providing answers to global healthcare challenges. Still, industry leaders are often reluctant to integrate it, given the financial investment required to incorporate it into healthcare institutions.[16]

Technological advances in low- and middle-income countries have driven the adoption of artificial intelligence (AI) in healthcare, with the potential to support the achievement of sustainable development goals. AI is already being used to combat diseases such as tuberculosis and malaria; however, concerns exist regarding the lack of ethical and regulatory analysis in these interventions. Although AI is increasingly being implemented, much research does not address the moral and regulatory challenges necessary for its large-scale use.[17]

It is worth noting that AI enables data integration, real-time information visualization, and remote work, all of which facilitate service management processes. However, its use can limit the autonomy of healthcare professionals, pushing humanism and critical-reflective reasoning into the background.[18]

Similarly, there is no legal framework regulating the use of artificial intelligence, although some have begun to develop laws in response to the disadvantages and societal impacts of these technologies. Legal loopholes still exist regarding the violation of patient and user confidentiality.[19]

On the other hand, the integration of AI into healthcare management is hindered by structural limitations, characterized by inequality and a lack of technological resources across different levels of care. In turn, users' perceptions of its application generate stigma and prejudice about information privacy. Therefore, an environment must be created where technology is not only practical but also responsible and ethical.[20,21]

Similarly, the creation of standardized AI systems for management places high demands on economic resources and specialized human talent for their incorporation. This emphasizes the importance of bioethics committees in their scope of use, prioritizing patient autonomy, consent, and privacy. [22,23]

Although its growth has been significant, it also raises ethical and legal challenges regarding the responsible application of its use in problem-solving and therapeutic decision-making.[24] That is why the WHO recognizes the importance of artificial intelligence in global health, emphasizing the need for autonomy and transparency. However, there are concerns about privacy and implementation costs.

Benefits of using artificial intelligence in healthcare management

AI in healthcare data management stands out for its potential to transform medicine due to its ability to collect, analyze, and interpret large volumes of clinical data, enabling the synthesis of information for data organization and complementing clinical decisions.[25]

In addition, AI increases the efficiency of healthcare systems by optimizing clinical data through electronic medical records, enabling well-informed decisions, reducing errors, and facilitating access to up-to-date information.[26] Similarly, it optimizes human talent management in technology projects through formal techniques. These tools enhance the effectiveness of skills assessment and facilitate informed decisions, thereby contributing to the success of IT projects, with a focus on the importance of accurate evaluations and continuous training.[27]

On the other hand, it can automate tasks, allowing professionals to devote more time to direct customer service. However, it is essential to preserve human contact to avoid depersonalizing care.[28] Therefore, human talent management articulated to rigorous ethical criteria, taking AI into account, contributes to improving efficiency in the selection, training, and planning of human resources.[29]

It is worth noting that the use of AI can enhance care services, enabling more personalized and effective management, alleviating the burden on medical staff, and providing essential data for informed clinical decision-making, all with a focus on upholding human dignity.[30,31]

In this context, it facilitates the continuous monitoring and surveillance of patients, as well as the collection of real-time biometric data, which enhances medical intervention and optimizes the delivery of healthcare services. It manages research processes, epidemiological and organizational data that facilitate the work of healthcare personnel.[32,33]

Therefore, the application of AI based on principles facilitates its implementation in the health field, making it possible to improve health management and research through the use of technologies such as distributed registries to ensure transparency, indicating that it can improve the quality of care within a regulatory framework.[34]

Opportunities for the use of artificial intelligence in healthcare management.

AI provides treatments that are more tailored to each patient, focusing on preventive interventions based on medical history, genetic data, and lifestyle factors, which leads to greater patient satisfaction and improved health outcomes. Additionally, it enhances operational efficiency in healthcare organizations, facilitating effective resource management and accurate forecasting of service demand.[35]

On the other hand, it optimizes healthcare administration by increasing efficiency, quality, and patient experience, focusing on organizing tasks, improving appointment scheduling, and anticipating demand, which reduces waiting times and costs. It also facilitates the personalization of treatments through data analysis.[36,37]

It also offers advantages in terms of clinical efficiency through the joint creation of value within the healthcare sector. A two-cycle model is suggested: the first cycle connects technology providers with healthcare customers, promoting user-oriented solutions. The second cycle connects customers with patients, optimizing healthcare through a better understanding of users. This highlights the importance of collaboration in delivering more personalized care.[38,39]

On the other hand, healthcare workers recognize AI's potential to optimize diagnostics and workflow processes. This is particularly true in the field of cardiology, where it optimizes the clinical process, from imaging to diagnosis, increasing accuracy and reducing variability.[40,41]

In turn, this tool has changed pharmaceutical services in hospitals. With the use of machine learning algorithms, pharmacists can identify drug interactions and adjust treatments, thereby increasing patient safety. It also enhances administrative tasks and inventory control, resulting in a more efficient service.[42,43]

Similarly, in the healthcare sector, through 4P Medicine —preventive, participatory, predictive, and personalized —this is achieved through the precision of data analysis, such as genetic information and medical records, which improves the accuracy of diagnoses and customized treatments.[44,45] That is why technologies increase efficiency and patient satisfaction. However, its adoption requires an ethical approach that safeguards data and ensures transparency in algorithms.

CONCLUSIONS

Artificial intelligence has emerged as an innovative tool in healthcare management, thanks to its ability to process large volumes of clinical information, optimize resources, and improve medical decision-making. This enables more efficient, personalized, and timely care, contributing to the strengthening of healthcare systems in various contexts. However, some gaps limit its integration, centered on the need for solid regulatory frameworks, the economic investment required, inequalities in technological access, concerns about data privacy and security, as well as the impact on professional autonomy that can lead to the dehumanization of care.

Therefore, it is necessary to establish monitoring mechanisms that allow for the regulation of AI incorporation into healthcare units from an ethical, academic, and scientific perspective, marked by the responsibility of trained human talent committed to values that promote care from a comprehensive and ontological worldview based on rights, as well as the development of standardized protocols that allow equitable access to this technological revolution in healthcare for the population.

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