

Bioethics in the age of artificial intelligence: challenges and perspectives

La bioética en la era de la inteligencia artificial: desafíos y perspectivas

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Abstract

The authors, Ana María Rivas Fernández and Carlos Ramos Ortiz, gathered various opinions from experts on the subject, arguing that artificial intelligence is truly revolutionizing medical practice, from potential

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diagnosis to the treatment of choice. Some key areas where this technology has been applied include: image evaluation for diagnosis, surgical assistance, patient monitoring, new drug development, and large-scale data analysis to identify trends, tasks that currently consume significant time and resources for humans. Recently, “generative” artificial intelligence systems, such as the popular ChatGPT, have been implemented. In short, these systems recognize patterns and provide options to the user from a different perspective, but by utilizing those same patterns and generating data based on similarity.

The reason these generative systems have had such a significant impact—and, above all, have sparked a revolution within artificial intelligence—is that they respond to and operate on natural language. No scientific knowledge is required, let alone expertise. Consequently, in the medical field, patients can access these systems directly, bypassing the physician’s judgmental situation that could pose a major risk, as they do not always possess the necessary knowledge for a correct diagnosis and treatment.

It is essential to establish a legal framework for the use of these technologies, as they present other implications such as risks related to confidentiality and privacy, as well as liability and transparency. Some options proposed in the article to address the aforementioned issues and ensure that these technologies respect the classic principles of autonomy are as follows: autonomy in the sense that patients are fully informed that they are interacting with an artificial intelligence system; beneficence, always acting in the patient’s best interest; non-maleficence, ensuring that AAI systems do not cause harm to patients through misinterpretations or data biases; justice, meaning these systems must be accessible and inclusive, thereby minimizing potential risks.

1. Introduction

Over time, medicine has had to overcome various obstacles that have arisen and led to a radical change in the way it is practiced, and recent years have been no exception. A significant recent example

was the COVID-19 pandemic, caused by the SARS-CoV-2 virus, which triggered a global health crisis and highlighted several shortcomings, but also areas of opportunity. However, the main challenge today—and perhaps the most complex one—is the overwhelming rapid development of modern technologies such as artificial intelligence (AI), which has created a disconnect between the direct contact between the physician and the patient. In this context, the article titled “Bioethics in the Age of Artificial Intelligence: Challenges and Perspectives,” published in 2024 in the journal *Medicina General y de Familia*, volume 13, issue 1, pages 1–3, by Ana María Rivas Fernández and Carlos Ramos Ortiz, seeks to analyze the ethical conflicts involving the use of these technologies in current medical practice, as well as the risks and benefits they entail (1). The original language of the work is Spanish, and to date, it has not been translated into other languages.

With this review, we aim to highlight the most important and novel points of the article regarding the use of technologies in medicine, in addition to contrasting them with our own opinions and emphasizing support for transdisciplinary medicine.

2. Discussion

Several aspects of the article stand out, which we believe can be divided into the advantages and disadvantages of using technologies such as Generative Artificial Intelligence (GAI). First, the advantages are highlighted; it is well known that these tools are useful for aiding diagnostic imaging by identifying patterns, making surgical interventions more efficient and precise, personalizing treatments, etc. Additionally, they allow for the identification of trends and correlations through big data analysis; last but not least, they can facilitate research aimed at developing new treatments or understanding key aspects of disease pathophysiology (1,2,3).

Similarly, we must highlight the fact that the use of modern technologies and AI presents an opportunity to improve medical care in

many underserved areas, especially in communities where access to timely care is limited (4).

On the other hand, there are certain associated disadvantages. Rivas Fernández and Ramos Ortiz point out that one of these is more closely related to AI. Since this information is very easily accessible to the general public, it can lead to confusion or misinterpretation of the data, as the public lacks the ability to discern between what is truly important and correct, and what may be incorrect or inapplicable in that specific context (1).

Another problematic aspect, and one that is paramount, is the handling of data confidentiality and privacy. In clinical practice, physicians and healthcare professionals must comply with certain regulations governing the handling and disclosure of patient data. In Mexico, this is based on NOM-004-SSA3-2012, “On the Clinical Record” (5). However, most platforms and algorithms like these are not subject to any legal regulation, making the misuse of data highly likely. One example is the lack of clarity and transparency regarding the functioning and decision-making of AI algorithms, a concept known as the “algorithmic black box” (6).

Similarly, and what we personally consider most relevant, is the relationship between the use of these technologies and the four most well-known bioethical principles: autonomy, beneficence, non-maleficence, and justice, first described in 1979 by Beauchamp and Childress (7).

Regarding autonomy, it is crucial to consider what we mentioned earlier: easy access to AI-based health information causes patients, in a sense, to “bypass” the doctor and place greater trust in the results provided by the algorithm. This poses a direct threat because, although it can help the patient understand their options in detail, the fact of not relying on a specialist can lead to decisions that are autonomous but do not necessarily reflect what the patient prefers.

Second, there are the principles of beneficence and non-maleficence, which are often analyzed together due to their close relationship. In short, they imply that the use of technologies must be aimed at improving medical practice, and that they should be used only

when it has been demonstrated that the proposed benefit outweighs the risks (8). It is essential to remember that the primary objective of any intervention must be to cause no harm; this is grounded in Hippocrates' oft-quoted phrase *primum non nocere* ("first, do no harm") (9).

Finally, the principle of justice is also threatened. This represents a current and significant problem, as innovations or emerging technologies are often not accessible to the majority of the population. That is why, to avoid widening the gap between those who can access these tools in a timely manner and those who cannot, strategies must be established to ensure accessibility and inclusion (10).

3. Conclusions

The article by Rivas Fernández and Ramos Ortiz presents us with a rather significant reality: the incorporation of emerging technologies, as well as any medical advance, is accompanied by ethical challenges, which we must always identify and manage in the interest of the person's well-being and dignity. This can be achieved through a thorough bioethical analysis, as well as timely legal regulation. The authors' analysis of bioethical principles is not only accurate but also necessary in the current context we live in, where technological tools are increasingly integrated into daily clinical practice.

While we agree with the authors on most points, we believe that the role played by all healthcare personnel—from technicians and nursing staff to physicians and administrative staff—in the evaluation and regulation of these technologies could have been explored in greater depth. As physicians in training, we are constantly in a learning environment, and something we have been taught from our very first day in medical school is the importance of teamwork. Having said that, we believe that a viable option for implementing this necessary regulation is through translational medicine (11).

It is essential that there be dialogue and collaboration among the different areas, without neglecting contact and closeness with

the patient. In this sense, the implementation of a transdisciplinary approach allows for the integration of scientific, medical, and technological knowledge with bioethical and legal aspects. This ensures that technological innovations are implemented safely, avoiding potential ethical conflicts.

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