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Medical education in times of Artificial Intelligence

La educación médica en tiempos de inteligencia artificial

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The evolution of the human race is the result of many years of incomparable history, it is all based on the hand of changing eras and generations. We were analogical, now we are technological. Although teaching is not a section of this chapter, its digital and technological transformation has advanced, as well as the way youth transformed it, going from basic education to motivations, different behaviors, ways of speaking, dressing, and even clothes, compared to two decades ago.

In today's world, it is essential for those of us who practice medical teaching to understand and adapt to these changes. Our role models were our teachers, grandparents, great-grandparents, and doctors, who left a path laid out. However, we must acknowledge that they became the "old guard generation," from whom we learned medicine, humanitarian values, loyalty, ethics, etc. We have lost those innate leaders, who became our mentors, little by little. At this time, we are facing a new generation of "Millennials" who do not understand a reality without technology, learned and are learning about school development, entertainment, and even their work activities in front of a screen [1].

In this case, artificial intelligence (AI) plays a predominant role in medical education and medical treatment. It has transformed the use of a smartphone with high quality technology for medical diagnostics and treatment. Would you like this to change? What does this situation look like from our society's perspective?

According to Heraclitus of Ephesus, "Change is the only constant." This is evolution second by second, without ignoring that for experts in change, with respect to medical errors, it threatens patient safety. Medical technology has been introduced into the highest level of auxiliaries and administrative work with an exemplary approach. It has also been evaluated for new automation opportunities to putt our environment into operation with a single keystroke, and this is the new form of medicine that goes from the interpretation of images to the surgical act, all using robotics [1,2].

Teaching today is complex, and for some, it is challenging to adapt because there are significant medical simulation laboratories created with AI, which can be difficult to access for those who do not have a university connection. There is already teaching training on the subject, simulations that allow the creation of real scenarios, in addition to assessing competencies and skills, in such a way that it will be advisable in new programs e.g., undergraduate and graduate medicine, to involve AI as part of the academic curriculum [3].

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One of the challenges of introducing AI into medicine is the loss of interaction with the patient, which, while true in certain fields like physical rehabilitation, physiotherapy, and mental health, cannot be completely replaced [3]. Currently, there are chatbots for medical use, patient triads, and professional assistants in clinical research; they are powered by AI and also enable privileges and information. Likewise, changes in information, medical-legal complications, image fabrication, and plagiarism can occur, especially in scientific articles that can be created on digital platforms containing unclassified information that could not eventually be detected by anti-plagiarism systems [4].

In the oncological field, AI is integrated every day in a multimodal way from radiological and histological images and advanced molecular diagnoses. This presents new opportunities for automated learning aimed at reaching precision oncology, which goes beyond genomics and standard molecular techniques. However, organizing information through "big data" and integrating computational methods for analyzing and diagnosing heterogeneous lesions seeks to guide its integration towards biomedical education and research in the near future [5].

In the modality of medical education currently directed by Ramírez Arias, formed in 4 aspects, teaching is maintained using technological tools and interactive presentations. Promoting professionalism without losing sight of professional, humanistic ethics, moderating behavior in the doctor-patient relationship and between health personnel, without contributing to alterations in their dress code: "the doctor must always look like a doctor." Strengthening effective communication, we look for tools in everyday care to communicate directly with the patient, their family and colleagues, with the aim of avoiding disputes regarding the patient's needs. Teachers speak and authorize their students; which is an excellent opportunity to create connections by networking and tutoring in group sessions to discuss clinical cases or simply accessing a laboratory technician's room [1].

On the one hand, the implementation of AI in the future could benefit the automation of processes that enable the interaction between doctor and patient. It could potentially enhance diagnostic accuracy, thus becoming a partner in therapeutic decisions. It is increasingly necessary to make critical and bibliographic reviews on the subject [4]. On the other hand, medicine today is still preventive, predictive, participatory, personalized, and precise; with new objective therapies, personalization and precision are linked to the new evidence-based medicine that requires efficient teaching programs supported by the improvement and dissemination of new knowledge [6].

The practical application of new tools has led to a transformation in medical education, yet it poses the traditional challenges of education. This dynamic interplay between innovation and continuity underscores the evolving nature of medical education, keeping it at the forefront of healthcare.

1. Abbreviations

AI: Artificial Intelligence

2. Administrative information

2.1. Additional Files

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2.3. Author contributions

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2.5. Statements

2.5.1. Conflict of interests

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