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Research Article

Interference of Artificial Intelligence in Preventive Medicinal Pharmacology and Medical Practice in the Context of Medical Ethics: A Cross-Sectional Approach

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Abstract

Enhancing artificial intelligence with medical ethics is an evolving technology that could use only the positive aspects of human thinking and avoid every negative shade, such as coercion, greed, envy, and selfishness. This cross-sectional study that investigates ethical decision-making according to Artificial Intelligence is possible by formulating a program to operate with empathy, sympathy and compassion with application to pharmacology and medical practice. This option finds good use in emergencies, protocol studies, and difficult council split decisions. The use of common sense is an empirical matter, which leads to a technical way of pretraining autonomous robotic mechanisms to act and respond properly to certain concepts, just like a human being might have done. Artificial Intelligence is to be able to make a sound ethical decision in the best interest of the patient.

Keywords: *Artificial Intelligence; Medical Ethics; Pharmacology; Medical Practice; Justice; Autonomy; Beneficence; Non-Maleficence; Best Interest of the Patient*

Introduction

There has been significant innovation in technology regarding the use of Artificial Intelligence in pharmacology, toxicology, and medical practice. Physicians and pharmacists can save time and present sound results by enhancing dynamics in image processing, data analysis, and differential diagnostics using intelligent applications and systems [1]. However, Artificial Intelligence must not act without barriers and rules because a matter of life and death cannot be left only to computational calculations [2]. Since pharmacology and medicine both operate upon human beings, it is crucial to underline the importance and contribution of Medical Ethics to the applications conducted using Artificial Intelligence.

Methods

This cross-sectional research examines how Artificial Intelligence could be further developed to include the four key elements that constitute the foundations of medical ethics, such as the principles of justice, autonomy, beneficence, and non-maleficence, especially with application in pharmacology and medical practice. At the same time, it is under investigation how Medical Ethics can intervene in this evolving technology in order for these intelligent mechanisms to use only the positive aspects of human thinking and avoid every negative shade, such as coercion, greed, envy, and selfishness [2].

Results and Discussion

In medical practice, a single intelligence program should be the last resort when a possible split decision is under discussion on medical councils [3]. A possible example works in oncology councils where different specialties may argue about what should come first in a patient's therapy plan [4]. Surgeons may propose that a PET scan followed by chemotherapy treatment should follow open surgery and vice versa [5]. Clinical pharmacology should not be left out of the spotlight either, since it has its significant key role in a proper medical plan. Ethical decision making according to Artificial Intelligence is possible by formulating a program to operate with empathy. This may seem controversial to say the least, but since intelligent programming has already been developed in a fast way to analyze and propose the best available options both in pharmacology and medical practice, it would not be a stretch to add specific ethical concerns in the form of introducing artificial empathy [6]. This would mean that a mechanical artifact can react to the emotion of a human being in the aspects of response, recognition, and understanding. A practical example is the companion robots or virtual agents for disabled patients and the elderly, whereas in medical decision making, more sophisticated programs already use big data analytics to extract information about thousands of situations with similar emotional patterns, viewpoints, and thoughts, thus considering the empathy factor along the way.

In case of an emergency, Artificial Intelligence may be able to make a sound ethical decision in the best interest of the patient. It is not too early to examine how Artificial Intelligence has enhanced Public Health Research in preventive pharmacology with tools to find proper paths through difficult Public Health challenges such as the Covid-19 Pandemic, where even the oxygen mask allocation process proved a very hard task to begin with [7]. Especially in pharmacology, scientists found an unprecedented task to complete since there were no drugs or vaccines available to prevent life failure. Artificial Intelligence could have worked on the pandemic explosion or similar situations by proposing secure and fast vaccination plans in sensitive geographical territories with little or no precaution measures available. In addition to, ethical challenges arise when physicians have to deal with the vast majority of the human population and not just a part of it, according to age, gender, or financial and social criteria. Since there is not enough medical, nursing or pharmaceutical staff to cover every possible patient, Artificial Intelligence would specify where medical and medicinal support is needed urgently to cover any emergency where an impossible choice between life and death of a single patient makes a substantial difference.

Other key factors of ethical decision making are sympathy and compassion, both of which play a crucial role in determining the best interest of the patient and respecting the principle of autonomy according to Medical Ethics [8]. On the one hand, a physician is not able to decide without considering them. On the other hand, Artificial Intelligence is not able to consider them unless they are technically presented in such a way that it is understandable and applicable by the mechanical artifact or program. Maybe there could be a robot that would put its hand on the shoulder of a sad person sitting at the doorstep with his head down and his arms around his head. The robot is not able to feel what this person is going through, but it will be able to analyze patterns and respond just like a human being. That image of the sad man is a visual proof of a posture which cannot be wrong, and every other person who would have happened to pass by may have understood the same thing about the person's sad state of mind. A simple gesture followed by an expression such as <<be patient and do not give up>> or maybe <<better days will come>> is something that everybody would think of doing. This is also known empirically as common sense, which leads to a technical way of pretraining autonomous robotic mechanisms to act and respond properly to certain concepts, just like a human being might have done [9].

The same model applies to pharmacology also, where Artificial Intelligence could help in drug allocation and personalized applications with sensitive ethical considerations such as religious and social beliefs, which many times have proven to be serious obstacles for a healthcare professional to navigate through [10]. For example, an ethical decision process of a proper medical supply could be enhanced by Artificial Intelligence through big data analytics. An advanced research program could extract sensitive information about beliefs and social aspects of a territorial population in case of an emergency epidemic to help doctors determine what percentage of patients would accept blood transfusion, standard medical support, or alternative drug therapy [11,12]. Furthermore, Artificial Intelligence can

analyze the Covid-19 pandemic consequences, such as drug shortage, to extract useful conclusions for the enhancement of preventive pharmacology [13,14]. There have been treatment plans that work very well in different kinds of conditions, which have never been paid attention to yet [15]. A pharmacological progressive analysis through generative pretrained technical platforms would offer a strong helping hand to pharmaceutical industries for future use [16]. Every such effort must take place only in the context of Medical Ethics because the principles of beneficence and non-maleficence are strong barriers against dispensing controlled drugs and drug trafficking in clinical pharmacology and in cases where scientists are strong-armed to conduct quick, responsive, and sound protocol studies [17]. Moreover, Artificial Intelligence could enhance equality, impartiality, and fairness, which are key elements of the principle of justice that constitutes the foundation of Medical Ethics, both in pharmacology and medical practice [18].

Artificial Intelligence could also ensure that the important ethical principles are always followed in toxicology, such as any implications in research, practice, and public health interactions, where scientists must act with integrity, responsibility, and transparency in result communication [19]. Moreover, predictive toxicology and data analysis are some of the main sectors where Artificial Intelligence plays an enhancing role, and it is of high priority to always take into consideration barriers like the principle of justice in human and animal experiments and secure the respect of autonomy, especially in human protocol studies [20].

Conclusion

It would be an understatement to declare that this is a very difficult subject to dive into. Reversing the title, Artificial Intelligence has to be occupied by the aforementioned principles of Medical Ethics when it interferes in pharmacology and medical practice. To do so, Artificial Intelligence needs to develop patterns that could mimic qualitative characteristics such as empathy, sympathy, and compassion. Introducing a technical approach to common sense is a practical way for a program to analyze movements and extract behavioral tactics. It is not possible for an autonomous robotic mechanism to develop actual feelings. It is possible, though, to program it in a way that different visual gestures reveal various human conditions such as happiness, sadness, depression, or uncertainty.

The beginning of Artificial Superintelligence?

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Conflicts of Interest

There are no conflicts of interest.

Bibliography

1. World Health Organization. “Ethics and governance of artificial intelligence for health”. Geneva (2021).
2. Amisha Malik P., *et al*. “Overview of artificial intelligence in medicine”. *Journal of Family Medicine and Primary Care* 8.7 (2019): 2328-2331.
3. Mervyn Conroy., *et al*. “Using practical wisdom to facilitate ethical decision-making: a major empirical study of phronesis in the decision narratives of doctors”. *BMC Medical Ethics* 22.1 (2021): 16.
4. Anne Ssrestha., *et al*. “Quality of life versus length of life considerations in cancer patients: A systematic literature review”. *Psycho-Oncology, APOS* 28.7 (2019): 1367-1380.
5. Anji Wall., *et al*. “Ethics in surgery”. *Current Problems in Surgery* 50.3 (2013): 99-134.

6. Hunt P., *et al*. "Running on empathy: Relationship of empathy to compassion satisfaction and compassion fatigue in cancer healthcare professionals". *European Journal of Cancer Care (England)* 28.5 (2019): e13124.

7. Millar MR., *et al*. "Ethics of vaccination: Should capability measures be used to inform SARS-CoV-2 vaccination strategies?" *British Journal of Clinical Pharmacology* 88.1 (2021): 47-55.

8. Pugh J. "Autonomy, rationality, and contemporary bioethics". Oxford (UK): Oxford University Press. Chapter 6, Informed Consent, Autonomy, and Beliefs (2020).

9. Jonsen AR., *et al*. "Clinical ethics: A practical approach to ethical decisions in clinical medicine. 7th edition". New York: McGraw-Hill (2010).

10. NK Chand. "Management of patients who refuse blood transfusion". *Indian Journal of Anaesthesia* 58.5 (2014): 658-664.

11. Simotas A and Kardamakis D. "Medical ethics in the era of artificial intelligence - A new landscape on medical practice?" AI Legal and Ethical Challenges, IntechOpen (2024).

12. Robert R., *et al*. "Ethical dilemmas due to the covid-19 pandemic". *Annals of Intensive Care* 10 (2020): 84.

13. Gohram Baloch., *et al*. "Risk-based allocation of COVID 19 personal protective equipment under supply shortages". *European Journal of Operation Research* 310.3 (2023): 1085-1100.

14. Jasmine Reimer. "Supply Chain during COVID-19, what went wrong?" Here (2020).

15. De Pentheny O'Kelly C., *et al*. "The impact of culture and religion on truth telling at the end of life". *Nephrology Dialysis Transplantation* 26.12 (2011): 3838-3842.

16. European Monitoring Center for Drugs and Drun addiction: Viral Hepatitis Policies in Europe, Lisbon (2023).

17. Alowais SA., *et al*. "Revolutionizing Healthcare: the role of artificial intelligence in clinical practice". *BMC Medical Education* 23 (2023): 289.

18. Soofi H. "Ethical aspects of facilitating the recruitment of people with dementia for clinical trials: a call for further debate". *British Journal of Clinical Pharmacology* 88.1 (2021): 22-26.

19. Weisberg Ethan., *et al*. "GPT-4 and medical image analysis: strengths, weaknesses and future directions". *Journal of Mechatronics and Artificial Intelligence in Engineering* 6 (2024).

20. Magavern EF., *et al*. "Health equality, race and pharmacogenomics". *British Journal of Clinical Pharmacology* 88.1 (2021): 27-33.

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