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Robots in Healthcare: Ethical or Unethical?

Artificial Intelligence (AI) has become an increasingly significant part of everyday life in recent years. However, there are important ethical considerations that need to be made when integrating AI and robotics into critical fields, such as healthcare. While robots in healthcare can improve efficiency and patient care, their use also introduces significant risks. This paper discusses both the risks and benefits of this integration for patients, healthcare workers, and society.

Patients play a central role in shaping the healthcare industry and are therefore essential to analyzing the ethical implications of robotics in healthcare. According to the comprehensive literature review done by Elendu et al., some issues that robotics in healthcare brings to patients are related to privacy, data security, accountability, transparency, and fairness (2023). AI's usage of patient data could breach severe consequences for patient trust and data integrity (Elendu et al., 2023). The robot must be adequately trained to encrypt, collect, store, and utilize sensitive data in an ethical way to ensure the patient's data remains private and secure (Elendu et al., 2023). Decision-making transparency is another ethical implication that the integration of robotics in healthcare brings. Based on the literature review done by Ntagianta, AI can effectively monitor health conditions and contribute to clinical decisions, but the patient's individual right to make independent choices regarding their care should be of utmost importance (2025). For patients to make this decision, the AI must be transparent in their rationale behind their recommendations (Ntagianta, 2025). Another ethical issue could be algorithmic bias, which could lead to unfair or incorrect diagnoses and treatments for patients, disrespectful language, and intimidating behavior (Ntagianta, 2025). The AI must be transparent in their decision-making and must be trained to treat patients fairly to reduce this issue (Ntagianta, 2025). Patient safety is the top priority, and currently robotics in healthcare can cause harmful incidents for patients.

Another major risk for patients with the integration of robotics in healthcare is robotic-assisted surgeries. Young's research on robotic surgeries showed that the number of robotic surgeries has increased significantly throughout the years, with there being 15.1% robotic surgeries in 2018 (2023). However, robotic surgeries require immense maintenance and are costly (Young, 2023). To keep robotic surgeries safe for patients, the systems require continuous training. The study done by Mijares shows that some skills needed for surgeries can be programmed into robots, but other skills such as communication and the delicate choice of words with patients cannot (2018). Fortunately, patients are allowed to ask human healthcare workers about the risks, costs, and benefits of robotic surgeries, but it is still unsure how safe and effective robotic surgeries are due to limited research (Young, 2023). This uncertainty may make the information that healthcare workers provide for patients inaccurate (Young, 2023). Besides that, the attempt to make surgical robots autonomous may reduce the possibility for this (Mijares,

2018). In the future, it is important for healthcare workers to remain involved in robotic surgeries and educated on robotic surgery innovations to use robotics ethically and safely and to correctly inform patients (Young, 2023).

The integration of robotics into healthcare not only creates ethical risks for patient care but also changes the roles of healthcare workers. Robots will reduce the number of roles within the healthcare system that are available to humans because robots have already significantly surpassed what healthcare professionals have been doing for years (Mijares, 2018). According to the research of Stahl and Coeckelbergh, it is uncertain whether robots are being introduced into healthcare to solve problems in healthcare and efficiency, or to save money by replacing human care (2016). The replacement of human workers with robots can also lead to "cold care," which means that patients will not feel as loved, warm, or seen since they are being taken care of by non-humans (Stahl & Coeckelbergh, 2016). Healthcare workers will have to start collaborating with robots, which is a new level of training healthcare workers must endure (Elendu et al., 2023). The ethical responsibility that healthcare workers have around working with robots will be a large burden, as they are required to understand and appropriately collaborate with robots to ensure patient safety (Elendu et al., 2023). Therefore, the integration of robotics in healthcare could cause significant issues for the careers and daily work lives of healthcare professionals.

Besides the risks for patients and healthcare workers, there are also other risks for society to be discussed such as accountability, ethical guidelines, and the preservation of human autonomy. Any errors that the AI produces must hold somebody accountable. Establishing who is responsible for errors is essential for ethical usage of robots in healthcare and to keep patients feeling safe and trusting the healthcare industry (Elendu et al., 2023). The integration of robotics into healthcare can bring societal distrust in the healthcare field. Plenty of people still do not trust AI, and not with their health, so it may take time before society accepts robotics in healthcare (Elendu et al., 2023). To ensure confidence and trust in robotics, ethical frameworks and guidelines must emphasize transparency, explainability, and user-centered design (Ntagianta, 2025). Another ethical consideration is the autonomy of healthcare robots. Healthcare research is aiming to give more autonomy to the robot, meaning that robots will be designed to conduct tasks without continuous human guidance (Stahl & Coeckelbergh, 2016). This could lead to errors not being caught or the full replacement of humans in healthcare (Stahl & Coeckelbergh, 2016). Trusting a robot so prominently that the industry will, one day, have mostly autonomous robots could be an ethical issue that causes problems for society.

In contrast to the fact that robotics in healthcare brings uncertainties and risks, there are also a multitude of benefits that this field expansion shows. The integration of robotics in healthcare has brought in a new era of innovation and efficiency because it intensifies medical innovation, produces enhanced diagnostics, and improves patient care (Elendu et al., 2023). Some diagnostic tasks that robots take over are analyzing large datasets to tailor treatment plans to patients, detecting diseases at their earliest stages, and providing healthcare workers with clinical decision support (Elendu et al., 2023). Besides diagnostic tasks, AI is also able to remotely monitor patients' health, provide personalized rehabilitation and physical therapy

exercises and monitoring, schedule appointments, analyze medical images, accelerate drug discovery, and assist surgeries (Elendu et al., 2023). Even though robotic surgeries are ethically challenging, they also bring immense efficiency because of robots' skills of precision, exactness, repeatability, and speed (Mijares, 2018). Due to this increased efficiency in surgeries and other tasks, healthcare workers can have less stress-inducing workdays since there is a decrease in the reliance of human caregivers (Mijares, 2018). Another benefit of robotics in healthcare is the enhanced accessibility of telemedicine and remote monitoring for populations that are unable to attend in-person visits (Ntagianta, 2025). There are a multitude of reasons why integrating robots into healthcare can benefit humans, but it is unsure if the benefits outweigh the risks.

After having discussed the risks and benefits of the integration of robotics within healthcare, it is clear that this innovation still needs refinement. Even though there are plenty of benefits, such as more efficient medical innovation, enhanced and quicker diagnostics, improved patient care, earlier detection of diseases, faster analysis of datasets, and decision support, there are still reasons why these benefits do not dominate the risks (Elendu et al., 2023). Risks exist within all these tasks, and they can harm patients' health and healthcare professionals' work environments. AI systems must ensure transparency, explainability, privacy, data security, accountability, and fairness for society to accept robots into healthcare (Elendu et al., 2023). The improvement of the ethical frameworks and guidelines is crucial to enhance public trust and confidence in robotics joining the healthcare industry. It is possible to get to this point, but as of right now, there are too many risks to allowing autonomous or non-autonomous robots in healthcare.

References

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Appendix

Generative AI was not used to write this essay.

Reflection

Since I did not use generative AI to write this essay, I will discuss my manual writing process. I first started by broadly searching for ethical issues within robotics. I quickly saw that there were multiple articles about robotic integration in healthcare, so I decided to pick that topic. I was interested in it because I recently did an internship at an AI healthcare startup in Ireland. During this internship, I had to research AI laws and regulations within healthcare, which sparked my interest in the topic for this essay. I searched for articles on this topic on Google Scholar and was quickly able to find five articles that would be relevant to the essay topic. Searching for these articles and reading their abstracts took about 30 minutes to an hour. Once my articles were found, I first wrote the introduction and then I wrote an outline for the rest of the essay based on the information I would be able to find in the articles. After the outline was created, I started reading the first article and added information from it within whichever paragraph it would fit in. I did this process for all five articles until the paper was fully written. After the essay was written, I was easily able to write the conclusion. Writing the entire essay took about three or four hours. After that I read the essay multiple times to eliminate errors and to shorten each paragraph, since I initially had three whole pages written, which was over the limit. Overall, my entire writing and research process took about five or six hours, and I am happy with what I have learned and how the essay turned out.