American Journal of Neurology Research

Review Article

The Influence of AI in Medical Ethics and Warfare

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Received: February 03 2025; **Accepted:** March 05, 2025; **Published:** March 14, 2025

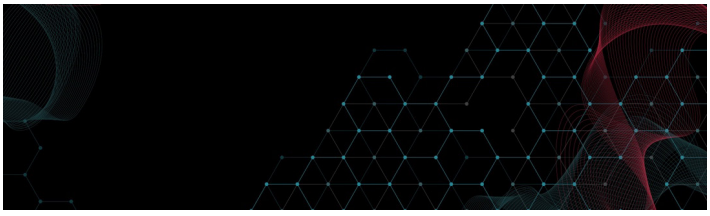
Citation: Ungar-Sargon J. The Influence of AI in Medical Ethics and Warfare. American J Neurol Res. 2025; 4(1):1-4.

Introduction

In thinking about the future revolution that is currently underway in artificial intelligence and its impact on our lives, we must imagine the ethical implications when non-human systems make what was until now human choices. Nowhere will this impact humanity than in the field of medicine and warfare. In these two poles of human action, saving life, and destroying life, AI will exert its influence for the better or for worse. In this review article I will compare these two opposite paradigms of human activity, those of healing and destroying.

Artificial intelligence (AI) is a term applied to a machine or software and refers to its capability of simulating intelligent human behavior, instantaneous calculations, problem-solving, and evaluation of new data based on previously assessed data [1]. AI heavily influences many industries and fields, including agriculture and farming, manufacturing and production, autonomous vehicles, fashion, sports analytics and activities, healthcare, and the medical system. This technology has the power to impact the future of the industry and human beings, but it is a double-edged sword.

The term "artificial intelligence," or in abbreviated form "AI," is widely used in society but its precise meaning is contested in both scholarly work and legal documents and we will not insist on a single definition here but instead pick out a few subtypes: Machine learning (ML), a subset of AI, has been the most popular approach of current AI healthcare applications in recent times since it allows computational systems to learn from data and improve their performance without being explicitly programmed [2].



Medicine

AI applications in healthcare have literally changed the medical field, including imaging and electronic medical records (EMR), laboratory diagnosis, treatment, augmenting the intelligence of the physicians, new drug discovery, providing preventive and precision medicine, biological extensive data analysis, speeding up processes, data storage and access for health organizations. However, this field of science faces various ethical and legal challenges. Despite tremendous strides made in the field of AI in communities, and its role in improving the treatment process, it is not accessible to all societies. Many low-income and developing countries still do not have access to the latest technologies. It should be noted that the ethical dilemmas, privacy and data protection, informed consent,

social gaps, medical consultation, empathy, and sympathy are various challenges that we face in using AI.

Issues such as patient autonomy, data privacy, algorithmic bias, and the potential for reduced human oversight necessitate a thorough ethical evaluation. This essay explores the influence of AI in medical ethics, focusing on its benefits and challenges while addressing the need for ethical guidelines to ensure responsible implementation.

Tommy, the robot nurse, helps keep flesh-and-blood doctors and nurses safe from coronavirus at the Circolo Hospital in Varese, Italy

The Ethical Advantages of AI in Medicine

AI offers several ethical benefits in the medical field by improving access to healthcare, enhancing diagnostic accuracy, and personalizing treatments. Therefore, before integrating artificial intelligence with the healthcare system, practitioners and specialists should consider all four medical ethics principles, including autonomy, beneficence, nonmaleficence, and justice in all aspects of health care.

Improved Access to Healthcare

One of the major ethical advantages of AI is its ability to bridge gaps in healthcare accessibility. AI-powered chatbots and telemedicine platforms allow patients in remote or underserved areas to receive medical consultations without needing physical access to healthcare providers. This reduces disparities in healthcare access and upholds the ethical principle of justice, ensuring that all individuals, regardless of geographical location or socioeconomic status, have the right to medical care.

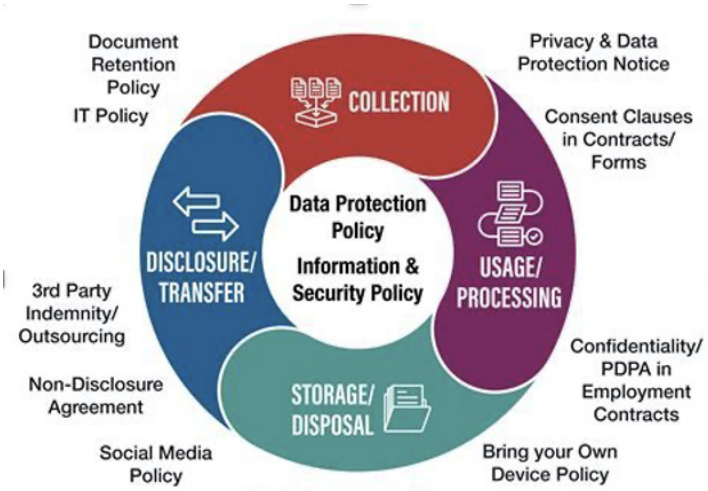
It has the potential to significantly reduce human errors in medical diagnoses and treatment plans. Machine learning algorithms can analyze vast amounts of medical data and detect patterns that may be overlooked by human practitioners. AI-assisted radiology, for example, has been shown to improve the early detection of diseases such as cancer, leading to more timely and effective interventions. By increasing accuracy and efficiency, AI helps uphold the ethical principle of non-maleficence, ensuring that harm to patients is minimized.

Personalized Medicine

AI-driven technologies can analyze a patient's genetic profile, lifestyle, and medical history to develop personalized treatment plans. This aligns with the ethical principle of **beneficence**, which prioritizes actions that promote patient well-being. Personalized medicine not only improves treatment effectiveness but also reduces unnecessary interventions, optimizing patient care.

Ethical Challenges Posed by AI in Medicine

While AI presents numerous advantages, its implementation also raises ethical concerns, particularly regarding data privacy, algorithmic bias, the erosion of human autonomy, and liability issues.



Privacy and Data Protection

General Data Protection Regulation (GDPR) was first enacted by the European Union (EU), as it amended the privacy legislation in other countries, such as the US and Canada. According to these regulations, all personal data and the activities of foreign communities and companies are processed by the union-based data processor or controller in order to protect the information of natural persons with sufficient protection [3]. In the United States, the Genetic Information Non-discrimination Acts (GINA) is an organization that prohibits employers from discriminative decisions according to the genetic health information of individuals [4].

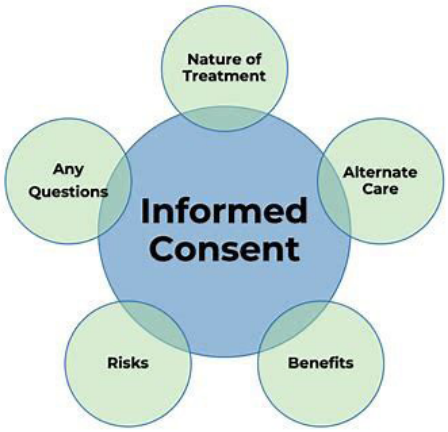
In fact, the role of AI in healthcare is to analyze consumer health data and medical device images, improve diagnoses and outcomes, as well as a helpful role in accelerating health research activities.

In addition, social media, as part of AI, play a vital role in disseminating health news or medical advice, especially in pandemics. However, these can be ostensible positive aspects of AI, and ensuring the safety of the patients' data is still a significant concern when using robots:

- In healthcare, current laws are not enough to protect an individual's health data.
- Clinical data collected by robots can be hacked into and used for malicious purposes that minimize privacy and security.

- Some social networks gather and store large amounts of users' data, for instance, individuals' mental health data, without their consent, which can be helpful in the marketing, advertising, and sales of these companies.
- Also, some genetics testing and bioinformatics companies, which are not legal or closely monitored, sell customer data to pharmaceutical and biotechnology companies.

AI systems in healthcare rely on large datasets, including sensitive patient information such as medical histories, genetic profiles, and treatment records. Ensuring patient confidentiality is an ethical obligation under HIPAA (Health Insurance Portability and Accountability Act) and other data protection laws. However, AI systems are vulnerable to cybersecurity threats, data breaches, and unauthorized access, posing a significant risk to patient privacy. Striking a balance between data-driven advancements and ethical data handling is crucial in upholding the principle of respect for patient autonomy.



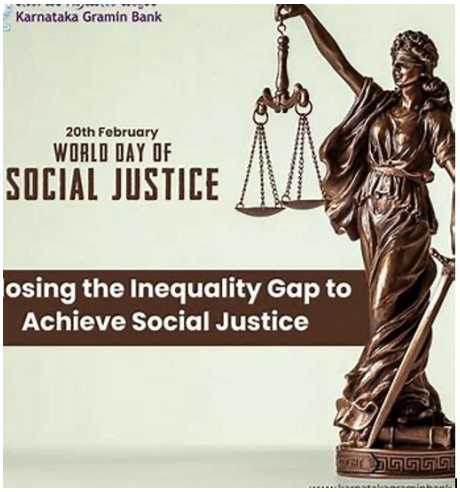
Informed Consent and Autonomy

Informed consent is a process of communication between a patient and health care provider, which includes decision capacity and competency, documenting informed consent, and ethical disclosure [5]. According to the definition of ethical responsibility, patients have the right to be informed of their diagnoses, health status, treatment process, therapeutic success, test results, costs, health insurance share or other medical information, and any consent should be specific per purpose, be freely given, and unambiguous. Concerns about this issue also increased with the rise of AI in healthcare applications [6].

Based on the autonomy principle:

- All individuals have the right to get information and ask questions before procedures and treatments.
- Patients should be able to be aware of the treatment process, the risks of screening and imaging, data capture anomalies, programming errors, the privacy of data and access control, safeguarding a considerable quantity of the genetic information obtained through genetic testing.
- Patients may refuse treatment that the health care provider deems appropriate.
- Patients have the right to know who should be responsible when these robotic medical devices fail or errors.

The answer is essential for both patient rights and the medical labor market.



Algorithmic Bias and Inequality

AI algorithms are trained on historical medical data, which may contain inherent biases. If AI models are trained on datasets that primarily represent certain demographics, they may produce biased outcomes that disproportionately impact minority groups. For instance, studies have shown that AI-based diagnostic tools may be less accurate for non-white populations due to underrepresentation in training data. This violates the ethical principle of justice, which mandates fairness and equality in healthcare. Addressing algorithmic bias through diverse data representation and continuous monitoring is essential for ethical AI deployment.

Social Gaps and Justice

In all countries around the world, with every development, discovery and invention, people face greater social inequality and less social justice. Although AI improves the accessibility to more information about science and technology, world events, climate changes, and politics around the world, it exacerbates social inequality as mentioned below [7]:

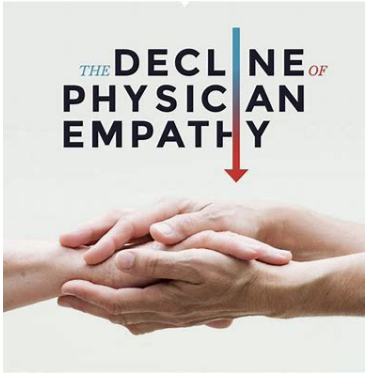
- Automation and advanced economies have widened the gap between developing and advanced countries.
- Many people lose their jobs as robots grow and develop.
- Bookkeepers and managers in different communities could lose their jobs with the increase of automated systems, and there will be a considerable decrease in salaries.
- The rise of surgical robots and robotic nurses in healthcare environment, operating instead of surgeons and caring for patients instead of nurses, threatens their future job opportunities.

Erosion of Human Autonomy in Decision-Making

AI's increasing role in diagnosis and treatment raises concerns about the diminished role of human judgment in medicine. While AI can provide recommendations, should it be allowed to make final medical decisions? Over-reliance on AI could undermine the physician's role, limiting their ability to apply professional expertise and ethical reasoning to complex cases. This challenges the principle of autonomy, as patients may have concerns about decisions being made by an algorithm rather than a human doctor. Maintaining a human-in-the-loop approach, where AI assists but does not replace healthcare professionals, is critical to preserving ethical medical practice.

Liability and Accountability

In cases where AI makes an incorrect diagnosis or recommends an ineffective treatment, the question of liability arises. If a physician follows AI-generated advice that leads to patient harm, who is responsible the physician, the AI developer, or the hospital? Current medical ethics frameworks do not fully address AI-related liability issues, making it imperative to establish legal and ethical guidelines that define responsibility, accountability, and transparency in AI-driven medical decisions.

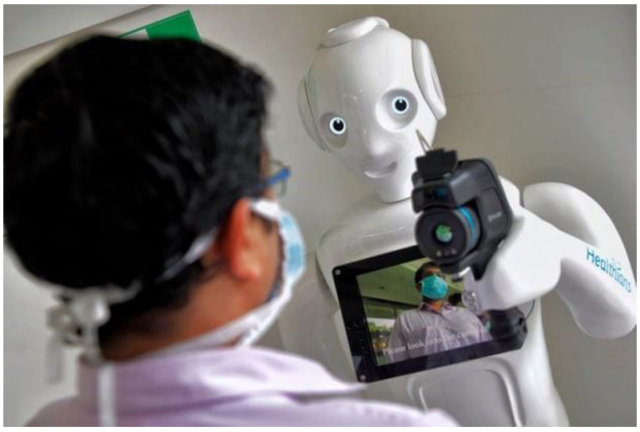


Medical Consultation, Empathy, and Sympathy

Integrating artificial intelligence (AI) with all areas of health care seems difficult and impossible. Due to uniquely human emotions, human and medical robots might not evolve together in a short time. Physicians and other care providers should seek consultation from or provide consultation to their colleagues, which is not possible in autonomous (robotic) systems. On the other hand, it seems unlikely that patients will accept "machine-human" medical relations instead of "human-human."

Doctors and nurses are expected to provide treatment in an empathetic and compassionate environment, which will significantly affect the healing process of patients. This will not be achieved with robotic physicians and nurses. Patients will lose empathy, kindness, and appropriate behavior when dealing with robotic physicians and nurses because these robots do not possess human attributes such as compassion. This is one of the most significant negative aspects of artificial intelligence in medical science. For instance [8]:

- In Obstetrics and Gynecology, any clinical examination requires a sense of compassion and empathy, which will not be achieved with robotic doctors.
- Children usually experience fear or anxiety as they engage in healthcare settings and meet professionals. Their behavioral manifestations are lack of cooperation, withdrawal, and aggression that could be uncontrollable with the new robotic medicine system.
- The use of medical robots in psychiatric hospitals may adversely affect patients who have severe psychiatric disorders.



India's robots such as Mitra are being used to reduce the risk of infection for medical staff and taking care of COVID-19 patients

The Need for Ethical Guidelines in AI-Driven Medicine

To address these ethical challenges, comprehensive guidelines and regulations must be developed to govern AI's role in healthcare. Ethical AI implementation should be guided by:

1. **Transparency and Explainability** – AI systems should be designed in a way that allows medical professionals to understand how decisions are made. Black-box models, where AI outcomes are not explainable, should be avoided in critical healthcare applications.
2. **Patient Consent and Control** – Patients should be informed about the use of AI in their treatment and given the choice to opt in or out. Informed consent is a fundamental ethical

requirement that ensures patients retain control over their medical decisions.

3. **Bias Mitigation Strategies** – Developers should use diverse and representative datasets when training AI models to ensure fair and unbiased healthcare recommendations. Continuous monitoring for algorithmic bias is necessary to prevent disparities in treatment outcomes.
4. **Human Oversight and Physician Involvement** – AI should be used as an augmentative tool rather than a replacement for medical professionals. Final decisions should always involve human judgment, particularly in complex or high-risk cases.
5. **Data Security and Privacy Protections** – Robust cybersecurity measures must be implemented to safeguard patient data from breaches, ensuring compliance with ethical and legal standards.
6. **Regulatory Compliance** – Governments and healthcare organizations should work together to develop clear regulations that define ethical AI use, address liability issues, and establish guidelines for AI accountability in medicine.

Conclusion

The influence of AI in medical ethics is profound, offering both opportunities and challenges. While AI enhances diagnostic accuracy, treatment personalization, and healthcare accessibility, it also raises ethical concerns about privacy, bias, autonomy, and liability. Despite the great potential and advancement of AI in the field of medical and health care, this achievement has imposed new requirements in the field of medical ethics. Consequently, we should be aware that its negative aspects might outweigh its benefits. To overcome this problem, experts must consider humanity and ethics in this regard. To ensure that AI serves as an ethical and responsible tool in medicine, it is essential to develop comprehensive guidelines, promote transparency, and uphold human oversight in AI-driven healthcare decisions. By addressing these ethical dilemmas proactively, AI can be harnessed to advance medical practice while preserving the core values of medical ethics autonomy, beneficence, non-maleficence, and justice.

The Impact of AI on Personal Ethics in Warfare

The Ethics of Artificial Intelligence in Combat pose significant challenges as military applications of technology evolve. As nations integrate AI into warfare, questions regarding moral responsibility and accountability emerge, complicating traditional notions of combat ethics.

With the potential for enhanced operational efficiency, the implications of AI-laden scenarios provoke intense debate. This article explores the intricate landscape surrounding the ethics of artificial intelligence in combat, addressing both its advantages and ethical dilemmas.

Central to the ethics of artificial intelligence in combat is the concept of accountability. The deployment of autonomous weapons raises questions about who is responsible for actions taken by machines. This complicates traditional notions of blame, especially when AI systems operate with varying degrees of autonomy and decision-making capacity.

Introduction

The integration of Artificial Intelligence (AI) in warfare is transforming modern military strategy, decision-making, and combat operations. AI-driven technologies, including autonomous weapons, drone warfare, cyber warfare, and decision-support systems, have the potential to increase efficiency, reduce casualties, and enhance national security. However, the use of AI in warfare also raises significant ethical concerns, particularly regarding personal ethics, accountability, moral responsibility, and the changing role of soldiers in combat.

Autonomous systems, such as drones and unmanned ground vehicles, have transformed reconnaissance and combat roles, reducing the need for human presence in high-risk areas. These AI-driven platforms can carry out missions with greater precision, mitigating the potential for collateral damage while increasing operational efficiency. Moreover, AI enhances decision-making processes by simulating potential outcomes and optimizing resource allocation. This technological integration supports commanders in making informed strategic choices, thereby improving mission effectiveness and adaptability in unpredictable environments. The ethical considerations surrounding these advancements, however, highlight the need for oversight in the ethics of artificial intelligence in combat.

AI and the Erosion of Moral Responsibility in Combat

Reduced Human Decision-Making in Life-and-Death Situations

Traditional warfare requires soldiers and commanders to make ethical decisions based on situational awareness, moral reasoning,

and adherence to the rules of engagement. However, AI-driven autonomous systems are capable of making decisions without direct human oversight, which raises critical ethical dilemmas:

- Who is morally responsible for AI-driven decisions? If an autonomous weapon incorrectly identifies a target and kills civilians, should responsibility fall on the programmers, the commanding officers, or the AI itself?
- Can AI make morally sound decisions? AI operates based on data, algorithms, and probabilities, lacking the ability to exercise human judgment, empathy, or moral reasoning in complex, unpredictable situations.

In the context of the ethics of artificial intelligence in combat, accountability and responsibility revolve around determining who is held liable for decisions made by AI systems. With the increasing reliance on AI in military operations, this question becomes increasingly complex. As AI systems execute actions independently, the distinction between human oversight and machine autonomy blurs, raising significant ethical dilemmas. Traditional military ethics are grounded in human decision-making, where individuals can be held accountable for their actions. However, in AI-led warfare, the delegation of authority to machines complicates the attribution of responsibility. Questions arise regarding the culpability of military commanders, developers, or operators when AI systems make lethal decisions.

As AI increasingly removes human soldiers from direct combat roles, there is a risk that moral responsibility becomes diffused, leading to a decline in accountability and ethical considerations in warfare.

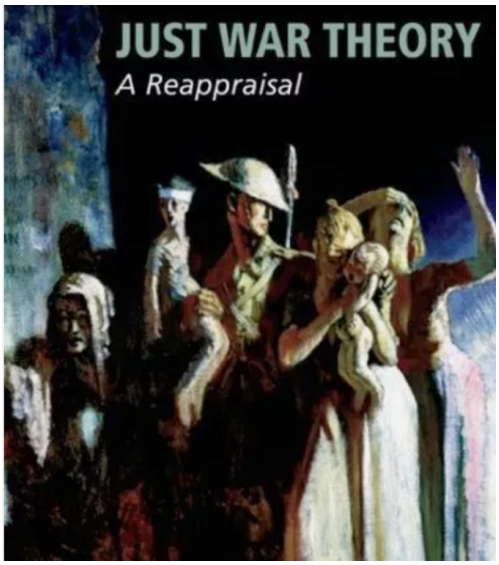
Psychological and Moral Detachment from Violence

AI-driven autonomous drones, robotic soldiers, and cyber warfare tools allow military personnel to engage in combat remotely, often from thousands of miles away. While this reduces risks to soldiers, it also creates ethical distance between those making decisions and those affected by them.

- Traditional combat involves direct human confrontation, where soldiers experience the gravity of their actions, leading to greater moral reflection.
- AI-enabled remote warfare reduces the psychological burden of killing, potentially desensitizing individuals to violence and making lethal force a more routine decision.

This detachment can lead to moral disengagement, where soldiers no longer feel the ethical weight of warfare, potentially lowering barriers to the use of force.

The emotional disconnect fostered by AI can lead to a troubling mindset, where enemy combatants are viewed merely as data points rather than individuals with lives and dignity. This dehumanization can perpetuate cycles of violence, making it easier for military personnel to overlook the ethical ramifications of their actions. Ultimately, the ethics of Artificial Intelligence in combat must grapple with the potential for dehumanization.



AI and the Challenge to Just War Theory

AI warfare challenges long-standing ethical principles, particularly those outlined in Just War Theory, which governs the morality of war.

Principle of Discrimination (Targeting Combatants vs. Civilians)

AI is expected to enhance precision targeting, reducing civilian casualties by differentiating between combatants and non-combatants. However, AI systems are not perfect and may:

- Misidentify civilians as enemy combatants, leading to unjustified deaths.
- Be manipulated through adversarial tactics, such as enemy forces exploiting AI weaknesses by tricking sensors or altering data inputs.

If AI systems are responsible for discriminating between lawful and unlawful targets, who bears the ethical responsibility when

errors occur? The absence of human moral judgment in these decisions raises serious ethical concerns.

Principle of Proportionality (Using Force Ethically)

The ethical use of force requires that military actions be proportionate to the threat posed. AI-driven weapons may:

- Escalate conflicts unintentionally, as autonomous systems may respond aggressively or disproportionately due to programming errors or unforeseen battlefield conditions.
- Lower the threshold for war, as nations may become more willing to deploy AI-driven forces since human casualties are minimized on their side.

These challenges could weaken ethical constraints in warfare, making it easier for nations to engage in military conflict without fully considering the moral consequences.

Ethical concerns surrounding decision-making in AI arise from the unpredictability and opacity of machine learning algorithms. The reliance on AI in combat situations necessitates scrutiny of how decisions are made, particularly regarding life-and-death scenarios.

Key issues include:

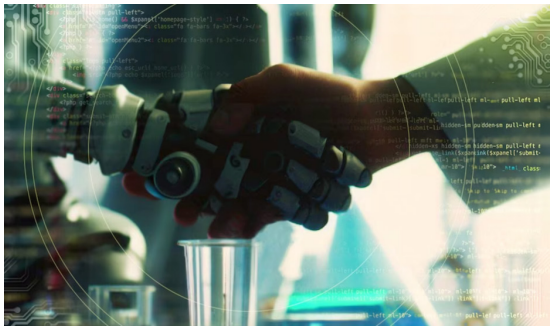
- Accountability: Determining who is responsible for erroneous decisions in combat poses significant challenges. If AI systems malfunction or misinterpret data, delineating liability becomes complex.
- Bias: Algorithms may exhibit biases based on the data they are trained on, leading to discriminatory outcomes that could unjustly target certain populations.
- Autonomy: The extent of human involvement in sanctioning AI decisions is critical. Excessive automation may erode human oversight, resulting in potentially reckless actions devoid of ethical considerations [9].

The Ethical Dilemma of AI-Enhanced Soldiers

Moral and Psychological Burdens on Human Soldiers

While AI can assist soldiers in combat, it also introduces new psychological and ethical challenges:

- Reliance on AI for battlefield decisions – Soldiers may feel compelled to follow AI-generated recommendations, even if they personally disagree with them. This raises concerns about the erosion of human autonomy in ethical decision-making.
- Guilt and moral injury – If AI systems cause civilian casualties or unintended destruction, human operators may experience guilt and moral distress, even if they had little control over the AI's actions.



AI-Enhanced Super Soldiers and Ethical Responsibility

Advancements in AI-powered exoskeletons, augmented reality, and brain-machine interfaces are creating enhanced soldiers with superior strength, endurance, and cognitive abilities. This raises several ethical dilemmas:

- Are AI-enhanced soldiers held to different ethical standards?
- Will enhanced soldiers be seen as expendable, leading to an increase in high-risk missions?
- Could AI-driven augmentation reduce soldiers' ability to feel empathy or moral hesitation, making warfare more ruthless?

The blending of AI with human combatants introduces new complexities in military ethics, as soldiers may become less responsible for their own actions due to AI intervention.

The Need for Ethical AI in Warfare

To mitigate these ethical risks, governments, military organizations, and international bodies must establish clear ethical guidelines for AI in warfare. Key recommendations include:

1. Human-in-the-Loop Decision-Making – AI should assist but never fully replace human judgment in life-and-death decisions.
2. Accountability Mechanisms – Clear responsibility frameworks must be established for AI-related actions, ensuring that military leaders and developers remain accountable.
3. International AI Warfare Regulations – Just as chemical and biological weapons are regulated, AI-driven warfare should be subject to international treaties to prevent its misuse.
4. Ethical Training for Soldiers and AI Developers – Military personnel and AI engineers must be educated on the ethical implications of AI warfare, promoting responsible use.

Conclusion

The rise of AI in warfare presents complex ethical challenges, reshaping personal ethics, accountability, and moral decision-making in combat. While AI has the potential to reduce human casualties and improve precision, it also risks eroding moral responsibility, creating ethical detachment, and lowering the threshold for war. To ensure that AI enhances rather than undermines ethical standards, it is crucial to establish clear moral, legal, and regulatory frameworks. By maintaining human oversight, accountability, and ethical constraints, AI can be integrated into warfare without sacrificing the fundamental ethical principles that govern the conduct of war.

References

1. Malik P, Pathania M, Rathaur VK. Overview of artificial intelligence in medicine. J Family Med Prim Care. 2019; 8: 2328-2331.
2. Sara Gerke, Timo Minssen, Glenn Cohen. Ethical and legal challenges of artificial intelligence-driven healthcare. Artificial Intelligence in Healthcare. 2020; 26: 295-336.
3. Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016. On the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC. 2016.
4. https://www.ashg.org/advocacy/gina/
5. Informed Consent: American Medical Association (AMA).
6. Markose A, Krishnan R, Ramesh M. Medical ethics. J Pharm Bioallied Sci. 2016; 8: 1-4.
7. Nordling L. A fairer way forward for AI in health care. Nature. 2019; 573: 103-105.
8. https://www.theguardian.com/global-development/2020/dec/02/robodoc-how-india-robots-are-taking-on-covid-patient-care-mitra
9. https://totalmilitaryinsight.com/ethics-of-artificial-intelligence-in-combat/