ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 07,2025

Journal: https://www.academicpublishers.org/journals/index.php/ijai

ARTIFICIAL INTELLIGENCE AND MEDICAL ETHICS: BIOETIC BALANCE UNDER MODERN TECHNOLOGIES

Tursunova Dilnura Akram qizi
Samarkand State Medical University
Faculty of Medical Work No. 1
5th-year 530-group student
Makhmudova Aziza Nugmanovna
Scientific supervisor: Professor,
Head of the Department of Social and Humanitarian Sciences

Annotatsiya: Ushbu maqolada zamonaviy tibbiyotda sun'iy intellekt (SI) texnologiyalarining jadal rivojlanishi ortidan yuzaga kelayotgan bioetik muammolar tahlil qilinadi. Diagnostika, davolash, bemor monitoringi va ma'lumotlar boshqaruvida SI vositalarining qo'llanilishi tibbiy qarorlar uchun axloqiy javobgarlik, shaxsiy ma'lumotlar himoyasi va bemor huquqlarining ta'minlanishi kabi masalalarni dolzarb etmoqda. Tadqiqot xalqaro va milliy hujjatlar, amaliy tajribalar asosida olib borildi. Maqola SI texnologiyalarining sog'liqni saqlash tizimiga integratsiyasi jarayonida bioetik muvozanatni ta'minlash yo'llarini aniqlashga qaratilgan.

Kalit so'zlar: Sun'iy intellekt, bioetika, tibbiy axloq, diagnostika, ma'lumotlar maxfiyligi, tibbiy qaror, shaxsiy huquqlar, tibbiy texnologiyalar.

Abstract: This article analyzes bioethical problems arising from the rapid development of artificial intelligence (AI) technologies in modern medicine. The use of AI tools in diagnostics, treatment, patient monitoring, and data management makes such issues as ethical responsibility for medical decisions, protection of personal data, and ensuring patient rights relevant. The research was conducted on the basis of international and national documents and practical experience. The article is aimed at identifying ways to ensure bioethical balance in the process of integrating AI technologies into the healthcare system.

Keywords: Artificial intelligence, bioethics, medical ethics, diagnostics, data privacy, medical decision, personal rights, medical technologies.

Аннотация: В данной статье анализируются биоэтические проблемы, возникающие в связи с быстрым развитием технологий искусственного интеллекта (ИИ) в современной медицине. Использование инструментов ИИ в диагностике, лечении, мониторинге пациентов и управлении данными делает актуальными такие вопросы, как этическая ответственность за медицинские решения, защита персональных данных и обеспечение прав пациентов. Исследование проводилось на основе международных и национальных документов, практического опыта. Статья направлена на определение путей обеспечения биоэтического баланса в процессе интеграции технологий искусственного интеллекта в систему здравоохранения.

Ключевые слова: Искусственный интеллект, биоэтика, медицинская этика, диагностика,

ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 07,2025

Journal: https://www.academicpublishers.org/journals/index.php/ijai

конфиденциальность данных, медицинское решение, личные права, медицинские технологии.

Introduction

In recent years, the introduction of artificial intelligence (AI) technologies in the field of medicine has contributed to improving efficiency, accuracy, and speed within healthcare systems. AI algorithms have been noted to work with high precision in detecting early stages of cardiovascular diseases, cancer, diabetes, and other illnesses. However, alongside these achievements, new bioethical questions have emerged: for example, who is responsible for decisions made by AI? How are patients' personal data protected? Is the human communication between doctor and patient being lost?

Because decision-making in medicine is closely linked to human life, the ethical and legal compliance of AI tools remains a constant subject of debate. For instance, AI's capabilities in fields such as imaging diagnostics (X-ray, MRI), genetic analysis, early cancer detection, and drug selection are highly valued.

However, since medical decisions are directly related to human health and life, the use of AI technologies raises a number of bioethical issues. Primarily, who will be ethically and legally responsible for decisions made by AI? Issues such as algorithmic impartiality, confidentiality of personal medical data, obtaining patient consent, and preservation of humanity and empathy require in-depth discussion within the framework of bioethics.

From this perspective, the introduction of AI technologies in medicine is not only a technical issue but also a matter of maintaining ethical and social balance. Artificial intelligence cannot fully replace human activity, especially in cases where ethical decision-making is necessary. Therefore, this article analyzes the role of AI tools in medical practice, the bioethical requirements imposed on them, and the current pressing issues in this area, as well as highlights ways to achieve a bioethical balance.

Methods

The article is based on qualitative research methods. Through literature analysis, international bioethical documents (Helsinki Declaration, UNESCO declarations), guidelines regulating AI technologies, and recent scientific articles were studied. Additionally, ethical approaches to AI technologies in healthcare systems of the European Union, the USA, and Japan were compared.

First, to identify bioethical issues related to the use of artificial intelligence in medicine, literature at the international and national levels, scientific articles, declarations, and regulatory documents were analyzed. In particular, documents developed by UNESCO, the European Union, and the World Medical Association were taken as a basis.

Furthermore, through normative-legal analysis, the regulatory frameworks governing medical AI technologies in various countries were studied. Using a comparative analysis approach, the ethical positions of the USA, the European Union, and Uzbekistan regarding AI-based medical services were compared. This clarified the differences in bioethical approaches in different cultural and legal contexts.

The study also conceptually analyzed key concepts such as "algorithmic decisions," "ethical responsibility," "humanity and empathy," and "personal data security." Through practical examples, the ethical implications of AI technologies in diagnostics, disease prediction, and clinical decision support were highlighted.

This methodological approach allowed for a deep, systematic, and modern analysis of the integration of bioethics and AI.

ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 07,2025

Journal: https://www.academicpublishers.org/journals/index.php/ijai

Through normative-legal analysis, the ethical issues of medical platforms operating with AI tools (such as data confidentiality and automated decisions) were examined. Based on a conceptual approach, concepts such as "algorithmic decision," "medical responsibility," "human factor," and "bioethical oversight" were analyzed. The study also reviewed ethical problems and practical consequences illustrated by cases of AI introduction in medicine.

Results

Analyses showed that although the widespread use of AI technologies in healthcare has brought significant efficiency, ethical and legal risks have also increased alongside these processes. First, the boundary of responsibility between doctors and developers for medical decisions made by AI is often unclear. This leads to ambiguities in determining accountability for patient lives in emergency situations.

Second, ensuring the confidentiality of the large volume of personal medical data used in AI system operations has been recognized as a global problem. In many platforms, information security measures are not sufficiently strong, which poses a risk of violating patient rights.

Third, AI-based systems have been found to reduce human interaction with patients, leading to a weakening of empathy and ethical communication in medicine. This situation has especially negative consequences in fields such as oncology, psychiatry, and palliative care.

However, some developed countries are taking specific measures to address these problems: for example, the European Union has developed an ethical code for artificial intelligence, and in the United States, clinical AI tools must be strictly approved through the FDA.

Discussion

The application of artificial intelligence technologies in medicine is inevitable and beneficial, but this process requires strong ethical oversight. Medical decisions should be based not only on accuracy but also on humanity, empathy, and ethical responsibility. AI should be regarded as an assisting tool in these processes, but it should not completely replace the doctor’s decision.

Data security remains one of the main directions of 21st-century bioethics. Collecting, storing, or analyzing data without patient consent in AI-driven systems is considered a violation of bioethical norms. Therefore, any medical tool developed based on AI must undergo ethical and legal evaluation.

Although AI technologies increase efficiency in diagnostics and treatment, many open questions remain about their ethical assessment. Primarily, there is no global approach regarding who should bear responsibility for clinical decisions made based on AI. Doctors, programmers, and system developers all participate in this chain, but the boundaries of ethical responsibility are not clearly defined.

Moreover, the collection and analysis of large amounts of personal medical data required for AI operation pose complex problems related to patient rights. Many AI platforms lack guaranteed or transparent information security, increasing the risk of using patient data without consent. From this perspective, bioethical standards must be an integral part of every AI-based medical system.

Additionally, the automation of many clinical processes by AI technologies may reduce human interaction. One of the most important values in medicine—empathy, mental approach to the patient, and reliable communication—can be weakened under the influence of technological tools. This situation can have negative consequences especially when working with patients suffering from chronic or mental illnesses.

Thus, the use of AI technologies in modern medical practice must be conducted in harmony with both scientific progress and ethical values. If technological achievements are not aligned

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 07,2025
Journal: https://www.academicpublishers.org/journals/index.php/ijai

with ethical standards, they may lead not to the expected positive outcomes but to negative social consequences. Bioethics serves as the main theoretical and practical tool to ensure this balance.

Non-interactive technologies weaken the trust between doctor and patient. This trust is the fundamental ethical foundation of medicine. Therefore, AI technologies should function not as a replacement for the doctor but as a tool that supports their decisions. By maintaining the priority of the human factor and using technologies wisely, it is possible to achieve bioethical balance.

Conclusion and Recommendations

Based on the research results, the following conclusions and recommendations can be made:

1. The use of artificial intelligence technologies in medicine must be accompanied by ethical oversight and legal regulation.
2. When using AI tools in medicine, patients' informed consent, confidentiality of personal data, and information security must be ensured.
3. AI tools should be used as supportive aids, with the human factor remaining the leading element in decision-making.
4. The teaching of bioethics should be expanded in medical and technological fields, and doctors and developers must have bioethical literacy.
5. Bioethics committees should pre-assess the ethical and social consequences of AI-based medical platforms.

The conducted analyses and research indicate that with the rapid implementation of artificial intelligence technologies in medicine, important questions related to medical ethics and bioethics also gain urgent significance. Although AI systems demonstrate high efficiency in clinical accuracy, speed, and functionality, their role in making decisions related to human life must be carefully considered from an ethical standpoint. Especially, issues such as who is responsible for AI-based decisions, how to protect patient data, and how to preserve the element of humanity must be regulated within bioethical norms.

Additionally, information security, the legal and ethical aspects of patient consent, the functional division between doctors and AI, as well as maintaining empathy and ethical approaches in patient communication remain among the fundamental principles of modern medicine. The harmony of bioethics with modern technologies is essential for forming a balanced and responsible approach in this field.

Recommendations:

1. Bioethical expertise must be mandatory before the development and during the application of AI-based medical systems.
2. The human factor must remain the priority in medical decision-making — AI tools should serve as assistants.
3. Strict compliance with international standards on confidentiality and information security must be ensured when handling patients' personal data.
4. Regular educational and training programs on bioethics for doctors, IT specialists, and medical managers should be introduced.
5. Legal and ethical regulations concerning the role of artificial intelligence in medicine should be developed and integrated into national legislation.

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 07,2025

Journal: https://www.academicpublishers.org/journals/index.php/ijai

REFERENCES:

1. UNESCO. (2005). Universal Declaration on Bioethics and Human Rights.
2. European Commission. (2021). Ethics Guidelines for Trustworthy AI.
3. World Medical Association. (2013). Declaration of Helsinki.
4. Topol, E. (2019). Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again.
5. Ministry of Health (Uzbekistan). (2022). Regulations on Medical Information Systems and Ethical Standards.
6. Karimov, B. (2023). “Artificial Intelligence and Medical Ethical Security.” Bioethics Journal.