

THE IMPACT OF ARTIFICIAL INTELLIGENCE ON PERSONALIZED MEDICINE: A VISIONARY REVIEW OF INNOVATIONS, CHALLENGES & FUTURE POSSIBILITIES

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DOI: <https://doi.org/10.5281/zenodo.15572289>

Keywords

Artificial Intelligence, or AI, is used in personalized medicine, patient monitoring, machine learning, EHRs (Electronic Health Records), and tailored treatments.

Article History

Received on 18 April 2025

Accepted on 18 May 2025

Published on 28 May 2025

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Abstract

Integrating artificial intelligence (AI) in personalized medicine revolutionizes healthcare by enabling tailored treatments and interventions. AI analyzes complex data from genomics, electronic health records, and wearable devices to enhance diagnostic accuracy, accelerate drug discovery, and support individualized treatment planning. While AI's potential benefits are vast, challenges such as data privacy concerns, algorithmic bias, high implementation costs, and lack of regulatory frameworks must be addressed. To unlock AI's full potential in personalized medicine, it is crucial to develop ethical guidelines, ensure model transparency, and foster collaboration among healthcare professionals, AI researchers, and policymakers. This article explores AI's current role, challenges, and future possibilities in personalized medicine, highlighting its potential to transform healthcare and improve patient outcomes. As AI continues to evolve, it is essential to prioritize patient-centered care, ensure data security, and promote transparency in AI decision-making processes. Ultimately, the future of personalized medicine depends on our ability to harness AI's potential while addressing its challenges and limitations. With careful planning, collaboration, and innovation, AI can help us achieve better health outcomes, improve patient experiences, and reduce healthcare costs.

INTRODUCTION

medicine is revolutionizing healthcare by tailoring treatments to each individual's unique profile. By harnessing a vast array of data on genetics, environmental factors, and lifestyle, healthcare providers can make informed decisions, accurately forecast disease progression, and deliver targeted treatments that enhance patient outcomes (Udegbe, Francisca & Ebulue, Ogochukwu & Ebulue, Charles & Ekesiobi, Chukwunonso. 2024) Artificial intelligence (AI) has emerged as a game-changer in healthcare, particularly in diagnostics,

treatment planning, and patient care management. By rapidly processing and analyzing vast amounts of complex data, AI technologies have become essential in realizing the full potential of personalized medicine. AI excels in uncovering patterns and correlations within intricate datasets, including genomics data, medical imaging, and electronic health records, which would be impossible for humans to detect. Leveraging machine learning and deep learning algorithms, AI introduces innovative solutions to longstanding healthcare challenges,

enabling more accurate diagnoses, predicting patient outcomes, and recommending customized treatments (Udegbe, Francisca & Ebulue, Ogochukwu & Ebulue, Charles & Ekesiobi, Chukwunonso. 2024).

Personalized medicine has the potential to revolutionize patient care by tailoring treatments to an individual's unique genetic and molecular profile. AI enhances this approach by analyzing vast datasets, identifying disease patterns, and predicting treatment responses with unprecedented accuracy. The ability of AI-driven models to integrate data from diverse sources, including electronic health records, medical imaging, and genomic sequencing, positions them as powerful tools in modern medicine. However, for AI to achieve its full potential, interdisciplinary collaboration among clinicians, data scientists, and policymakers is essential. Addressing ethical and regulatory concerns, ensuring transparency in AI models, and validating AI-based solutions through rigorous clinical trials are crucial steps toward the widespread adoption of AI in personalized medicine and predictive diagnostics (Abbas et al., 2025)

1.1. PROBLEM STATEMENT

AI technologies have demonstrated potential in personalized medicine, including disease diagnosis, drug discovery, and treatment optimization (Bhattamisra et al., 2023; Schork, 2019). In particular, deep learning and neural networks have proven effective in predicting disease outbreaks and analyzing complex biomedical data (Bhattamisra et al., 2023). Nonetheless, further research is needed to refine these techniques and enhance their accuracy and reliability in clinical settings.

One significant research gap is the integration and interpretation of diverse data types. While AI can analyze large volumes of data from high-throughput assays, we require better methods to store, aggregate, access, and integrate this data to advance personalized medicine (Schork, 2019). Furthermore, the heterogeneity of pathophysiological factors contributing to diseases complicates the development of genuinely personalized treatment approaches, necessitating more sophisticated AI models.

Another critical area that requires attention is the ethical and regulatory framework surrounding AI in

healthcare. Data privacy, algorithmic bias, and human oversight in decision-making processes must be addressed (Singh et al., 2023). The collection, storage, and analysis of large amounts of sensitive patient data for AI-driven personalized medicine pose significant risks to patient privacy and confidentiality.

1.2. RESEARCH GAP

There is a gap in developing robust frameworks for the responsible deployment of AI in clinical practice. To build trust among healthcare professionals and patients, it is essential to ensure the transparency and interpretability of AI algorithms (Fatima et al., 2023). The use of AI in personalized medicine has shown significant promise; however, several research gaps remain. Patients may not fully understand the implications of AI-driven personalized medicine, including how their data will be used and the treatment's potential risks and benefits. They may not realize the consequences of not sharing accurate information about their health, which can lead to severe conditions. Therefore, AI applications in personalized medicine should be designed to build patient trust, encouraging individuals to share their data freely for tailored treatment solutions. In conclusion, while AI has made significant progress in personalized medicine, there are still gaps in data integration, model refinement, ethical considerations, and clinical implementation. Addressing these gaps will be crucial for realizing AI's full potential in delivering truly personalized healthcare solutions.

1.3. RESEARCH QUESTIONS

- How does artificial intelligence contribute to personalized medicine by improving treatment?
- How can we evaluate AI and its effectiveness in tailoring treatment plans?

1.4. RESEARCH OBJECTIVES

- To analyze the role of AI in personalized medicine.
- To evaluate AI and its effectiveness in tailoring treatment plans.

1.5. RESEARCH ASSUMPTIONS

- AI can enhance personalized medicine by improving the accuracy of diagnostics and treatment plans.
- Ethical challenges may reduce the adoption of AI healthcare.
- AI can reduce errors by analyzing large amounts of group data.

2. LITERATURE REVIEW

Artificial Intelligence has proved to be fundamental in analyzing and interpreting complex biological data. AI analyzes large genetic, medical, and lifestyle data to uncover patterns that inform tailored treatments. In Medical Imaging, AI algorithms analyze images to detect anomalies that may escape the human eye. Machine Learning models that mimic human cognition enable healthcare professionals to treat risk with unprecedented accuracy. (Acs, Rantalainen, & Hartman, 2020; Mann, Kumar, Zeng, & Strauss, 2021; Xu et al., 2021). These models can predict disease susceptibility, understand genetic predispositions, and even forecast disease progression by analyzing an individual's genetic makeup. (Udegbe, Francisca & Ebulue, 2024). For example, Genomic profiling of cancer patients can help to plan target treatments and therapies. (Suri, Kaur & Shinde; 2024). These diagnostic systems rely on Deep Learning (a subset of AI that mimics the human brain's neural networks. Deep Learning models are trained on millions of X-rays, CT scans, and MRIs, enabling them to identify patterns indicative of disease.

AI uses algorithms, machine learning, and computational tools for discovering new drugs such as HFB301001 and HFB200603 for cancer (HifiBio Therapeutics). AI Model Tools are used in drug discovery, such as AlphaFold2, a model based on deep learning for predicting the 3D structure of proteins from amino acid sequence. (Jumper, Evans, Pritzel & Green)

The incorporation of AI into wearable technology and remote monitoring gadgets has revolutionized the management of patient health. These devices, which are outfitted with sensors and AI algorithms, gather and assess health data continuously in real-time, covering aspects like heart rate, blood pressure, glucose levels, and sleep patterns. AI algorithms

analyze this information to identify irregularities, trends, and possible health threats, offering both patients and healthcare professionals actionable insights into the patient's health condition (Udegbe et al., 2024).

Data Privacy is the biggest risk and concern regarding using AI in personalized medicine. Patient data, including genomic information, is highly sensitive and must be protected from unauthorized access. Ethical considerations, including privacy concerns, informed consent, transparency, and fairness, are at the forefront of discussions (Okolo et al., 2024). Personalized medicine promises tailored healthcare solutions. However, it also raises concerns about equality in medical care. There is a risk that AI-tailored treatments will be provided to those who can afford them, hindering access to health care. Policies are required to ensure equitable access to these technologies across different socio-economic groups. AI's role in diagnosing conditions and recommending treatments introduces questions about the extent to which medical decisions should be delegated to machines. While AI can enhance the precision of medical interventions, patients must retain autonomy over their treatment choices. Informed consent becomes more complex with AI, as patients must understand the role of AI in their care, including its limitations and the uncertainties involved. Patients must be fully informed about how their data will be used and the benefits and potential risks of AI-driven treatments. Trust in AI-driven health care also hinges on transparency regarding how AI systems make decisions and the ability of health care providers to explain these decisions to patients.

AI has a great impact on its use in personalized medicine; however, certain challenges need to be solved for successful implementation. Continued research, interdisciplinary collaboration, and robust ethical frameworks are essential to harness AI's transformative power in personalized medicine, ultimately leading to improved patient outcomes and more effective healthcare delivery (Mukherjee et al., 2024).

4. DATA INTEGRATION & ANALYSIS:

Following are the techniques that show how AI is impacting personalized medicine by shaping it better and more accurate:

The advent of artificial intelligence (AI) in healthcare is revolutionizing the way we approach disease diagnosis and treatment. AI enables a more comprehensive understanding of human health by seamlessly integrating diverse biomedical data, including electronic health records and complex datasets from genomics, proteomics, and metabolomics. Sophisticated machine learning algorithms can now identify correlations and patterns that were previously unknown, allowing for more accurate disease modeling and risk prediction. This, in turn, enables healthcare providers to develop personalized treatment strategies tailored to an individual's unique genetic, environmental, and lifestyle factors. As a result, diagnostic precision is enhanced, and patients can receive targeted therapies that are more likely to be effective. By harnessing the power of AI, we can unlock new insights into the complex interplay between genetic and environmental factors that contribute to disease, ultimately leading to better health outcomes and more effective treatments. This integration of AI and biomedical data has the potential to transform healthcare, making it more precise, effective, and patient-centered. By leveraging these advances, we can create a future where healthcare is more personalized, preventive, and predictive, leading to improved patient experiences and outcomes (Topol, 2019).

4.1. Wearable Devices:

Wearable health devices are revolutionizing how we monitor our health, collecting real-time data on vital signs like heart rate and glucose levels. Artificial intelligence algorithms analyze this data to identify potential health risks, predicting medical emergencies like seizures or cardiac arrest before they occur. This predictive capability enables healthcare providers to take proactive measures, intervening early to prevent serious complications. By leveraging wearable technology and AI-powered analytics, individuals can take a more active role in managing their health, and healthcare professionals can provide more effective, personalized care. This fusion

of technology and medicine has the potential to transform patient outcomes, enabling early detection, prevention, and treatment of diseases and ultimately improving the quality of life for individuals worldwide. With wearable health monitors and AI-driven insights, we can shift from reactive to proactive healthcare, anticipating and preventing health issues before they become major problems. (Piwek et al., 2016).

4.2. AI in Disease Management:

4.2.1. Improved Diagnosis & Disease Management

Artificial intelligence (AI) transforms disease diagnosis and management by providing faster and more accurate detection and monitoring of medical conditions. By leveraging machine learning algorithms, AI can analyze complex medical data, such as images, lab results, and patient histories, to help doctors diagnose diseases like cancer, diabetes, and neurological disorders more effectively. AI's ability to track disease progression and suggest personalized treatment plans in real-time enables healthcare providers to tailor care to individual patient's needs, leading to better outcomes. For example, AI-powered systems can identify early warning signs of disease complications or predict how well a patient will respond to treatment. This allows for timely interventions that significantly improve patient care. By harnessing the power of AI, healthcare professionals can make more informed decisions, provide more precise treatment, and ultimately enhance the quality of life for patients. With AI-driven clinical support systems, doctors can focus on what matters most - delivering high-quality, patient-centered care that addresses the unique needs of each individual. (Esteva, et al., 2017).

4.2.2. Enhanced Patient Monitoring and Outcome Prediction

AI-powered systems revolutionize patient care by continuously analyzing data to track disease progression and predict outcomes. This real-time insight enables clinicians to assess the effectiveness of treatments and make informed adjustments to care plans. By leveraging AI-driven analytics, healthcare providers can respond dynamically to changing patient needs, tailoring interventions to optimize outcomes. This personalized approach to medicine

empowers clinicians to deliver more precise and effective care, ultimately leading to better patient experiences and improved health outcomes. With AI's ability to forecast patient trajectories, healthcare professionals can anticipate and prepare for potential complications, providing proactive care that addresses the unique needs of each individual. By harnessing the power of AI, clinicians can enhance patient care, streamline clinical decision-making, and drive more effective treatment strategies (Esteva et al., 2019).

4.3. Benefits of AI in Personalized Medicine:

4.3.1. Patient Monitoring

AI-powered patient monitoring systems transform healthcare by leveraging real-time data from electronic health records, wearable devices, and remote sensors to monitor patient health closely. These systems can detect slight changes in vital signs or behavior, enabling early detection of potential complications like sepsis, cardiac arrest, or post-operative issues. Advanced machine learning algorithms analyze trends and patterns to provide predictive alerts, allowing clinicians to respond promptly and effectively. This technology is particularly valuable for managing chronic conditions like diabetes, hypertension, and heart failure, enabling patients to receive personalized care from the comfort of their own homes while still being closely monitored by healthcare professionals. By harnessing the power of AI-driven remote patient

monitoring, clinicians can deliver more proactive, precise, and patient-centered care, reducing hospital readmissions and improving overall health outcomes. This innovative approach to healthcare empowers patients to take a more active role in managing their health while also providing clinicians with the insights they need to make informed decisions and deliver high-quality care. (Sharma et al., 2018).

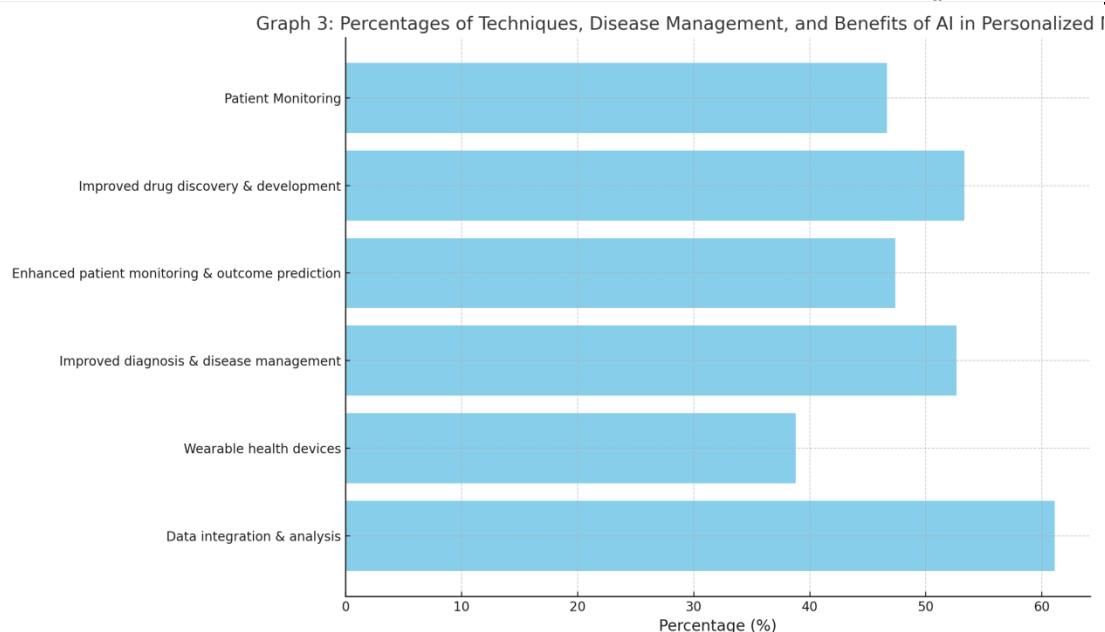
4.3.2. Targeted Treatment and Drug Discovery

Artificial intelligence (AI) is revolutionizing the field of drug discovery by using advanced algorithms to model how drugs interact with their targets and predict the effectiveness of potential treatments. In personalized medicine, AI can help tailor treatments to an individual's unique genetic and biochemical profile, leading to more effective and targeted therapies. By streamlining the drug discovery process and enabling more precise treatment approaches, AI has the potential to greatly improve patient outcomes and transform the way we develop and deliver medicines. With AI's ability to analyze vast amounts of data and identify promising new treatments, researchers can accelerate the discovery of innovative therapies and bring them to market more quickly, ultimately benefiting patients and advancing the field of medicine. By harnessing the power of AI in drug discovery, we can unlock new possibilities for treating complex diseases and improving human health (Chen et al., 2018).

Table 4.1: Showing the techniques of AI in personalized medicine.

| Theme | Techniques Of AI In Personalized Medicine | | Disease Management | | Benefits Of AI In Personalized Medicine | |
|---------------------|---|-------------------------|---|--|---|--------------------|
| Codes | Data Integration & Analysis | Wearable Health Devices | Improved Diagnosis & Disease Management | Enhanced Patient Monitoring & Outcome Prediction | Improved Drug Discovery & Development | Patient Monitoring |
| Frequency | 11 | 7 | 10 | 9 | 8 | 7 |
| Percentages | 61.11% | 38.8% | 52.63% | 47.36% | 53.33% | 46.66% |
| Overall Percentages | 18.55% | | 19.5% | | 15.46% | |

Overall percentages showing the techniques of AI in personalized medicine according to the reviewed articles.



Graph 4.1. Techniques of AI in personalized medicine.

3.4 Challenges:

4.4.1. Clinical Challenges

AI applications in healthcare face significant clinical challenges, particularly integrating AI tools into complex clinical workflows. Many AI systems are trained in ideal conditions, which can lead to inconsistent performance in real-world settings. This disparity can result in sub-optimal outcomes, highlighting the need for more robust and adaptable AI solutions that can effectively navigate the intricacies of clinical practice and deliver reliable results. (He et al., 2019). Clinicians' trust in AI recommendations is often hindered by the "black-box" nature of many algorithms, making it difficult to understand the reasoning behind AI-driven decisions. This lack of transparency can limit the adoption of AI in critical decision-making, as clinicians may be hesitant to rely on recommendations they do not fully comprehend, potentially impacting patient care. (Rajkomar et al., 2019).

4.4.2. Cost & Resource Challenge

Implementing AI in healthcare comes with substantial costs, including purchasing, installing, training, and maintaining AI systems. This financial burden can be particularly challenging for small

healthcare institutions, especially in developing countries, where resource constraints may limit access to these innovative technologies, potentially exacerbating healthcare disparities. (Jiang et al., 2017). Hidden costs, including ongoing system updates and robust cybersecurity measures, compound the financial burden of implementing AI in healthcare. These additional expenses can strain already limited budgets, making it essential for healthcare institutions to consider the total cost of ownership when investing in AI solutions. Hidden costs, including ongoing system updates and robust cybersecurity measures, compound the financial burden of implementing AI in healthcare. These additional expenses can strain already limited budgets, making it essential for healthcare institutions to consider the total cost of ownership when investing in AI solutions.

4.4.3. Data Privacy Issue

The need for massive datasets to train AI systems poses a significant challenge in healthcare, as handling vast amounts of sensitive patient data raises major concerns about privacy and security. The risk of data breaches or unauthorized access can have devastating consequences, including identity theft, medical exploitation, and reputational damage.

Ensuring compliance with stringent regulations like HIPAA in the U.S. or GDPR in Europe is a continuing challenge, requiring robust data governance, encryption, and access controls. Moreover, unauthorized data sharing or misuse can erode public trust in AI-driven healthcare, undermining its potential benefits. To mitigate these risks, healthcare organizations must prioritize data protection, implement robust security measures, and foster a culture of transparency and accountability. By doing so, they can ensure that AI systems are designed and deployed in ways that prioritize patient well-being, confidentiality, and trust. Ultimately, striking a balance between data-driven innovation and data protection is crucial for the long-term success of AI in healthcare. (Shen et al., 2021).

4.4.4. Ethical & Regulatory Issues

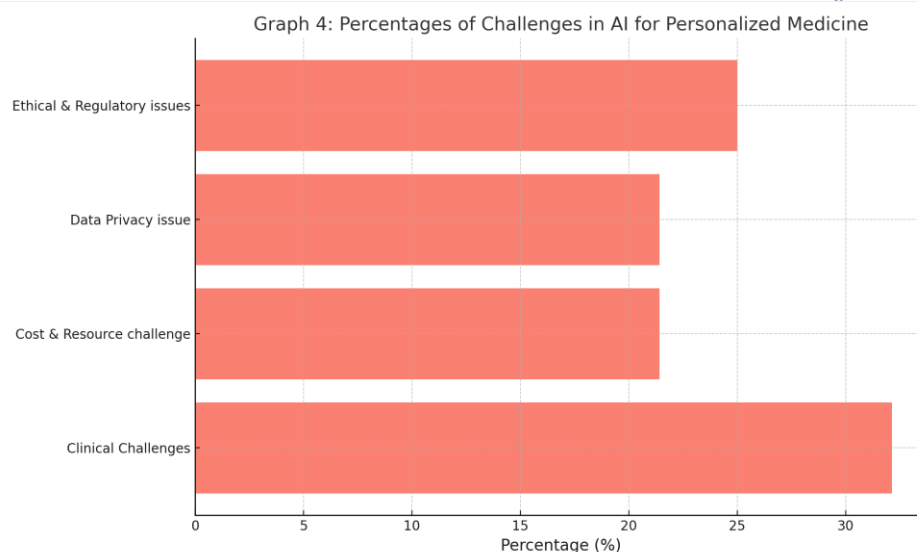
The integration of AI in healthcare raises significant ethical concerns that warrant careful consideration. Algorithmic bias is a pressing issue, where AI systems may inadvertently perpetuate existing healthcare disparities, affecting marginalized communities

disproportionately. Moreover, the unclear allocation of responsibility when AI systems make errors poses a substantial challenge, raising questions about liability and accountability. As regulatory frameworks struggle to keep pace with rapid advancements, the lack of clear guidelines creates uncertainty for developers, healthcare providers, and patients. To address these concerns, it is essential to establish robust guidelines, standards, and regulations that ensure AI systems are designed and deployed fairly, transparently, and accountable. This includes implementing measures to detect and mitigate bias, establishing clear lines of responsibility, and promoting ongoing monitoring and evaluation of AI systems. By prioritizing ethics and accountability, we can harness the potential of AI to improve healthcare outcomes while minimizing its risks and ensuring its benefits are equitably distributed. Ultimately, a multidisciplinary approach involving healthcare professionals, policymakers, and industry leaders is necessary to navigate the complex ethical landscape of AI in healthcare (Amann et al., 2020).

Table 4.2. Challenges of AI in personalized medicine.

| Theme | Challenges | | | |
|---------------------|---------------------|---------------------------|--------------------|-----------------------------|
| Codes | Clinical Challenges | Cost & Resource Challenge | Data Privacy Issue | Ethical & Regulatory Issues |
| Frequency | 9 | 6 | 6 | 7 |
| Percentages | 32.14% | 21.42% | 21.42% | 25% |
| Overall Percentages | 28.86% | | | |

Overall percentages show the challenges of AI in personalized medicine according to the reviewed articles.



Graph 4.2. Challenges of AI in personalized medicine

4.5. Better accuracy and effectiveness

The convergence of digitized health data and technological advancements is revolutionizing the development and application of AI in healthcare. A recent National Academy of Medicine report highlights the vast potential of AI to enhance specialist care and mitigate human limitations, such as fatigue and inattention. While acknowledging the need for caution, the report emphasizes the significant promise of AI in improving healthcare, including reducing machine errors and augmenting human capabilities. By harnessing the power of AI, healthcare professionals can leverage technology to deliver more precise, efficient, and effective care, ultimately leading to better patient outcomes. The report's findings underscore the importance of embracing AI's potential while ensuring its safe and responsible integration into clinical practice. As AI continues to evolve, it is likely to play an increasingly critical role in shaping the future of healthcare, enabling clinicians to provide more personalized, predictive, and preventive care. Combining human expertise with AI's capabilities can unlock new possibilities for improving patient care and outcomes (Sharma et al., 2020). Artificial neural networks, powered by machine learning and deep learning, are revolutionizing healthcare by analyzing vast datasets to identify complex patterns in patient outcomes. AI's ability to rapidly process data and provide accurate insights enables clinicians to make informed

decisions more efficiently. AI-driven clinical decision-support systems have the potential to significantly reduce diagnostic errors, enhance clinical intelligence, and streamline tasks such as data extraction and documentation. By augmenting human capabilities, AI can help clinicians focus on high-value tasks, improve patient care, and optimize clinical workflows. With AI's assistance, healthcare professionals can tap into the power of data-driven decision-making, leading to better patient outcomes and more effective care. By leveraging AI's capabilities, clinicians can deliver more precise, personalized, and efficient care, ultimately transforming the healthcare experience (Johnson, 2021). The fusion of human expertise with AI capabilities unlocks powerful insights in key areas like oncology, medical imaging, and primary care. By combining the strengths of human clinicians with AI's analytical prowess, healthcare professionals can gain a deeper understanding of complex medical data, leading to more accurate diagnoses, targeted treatments, and improved patient outcomes. This synergy enables clinicians to make more informed decisions, driving disease detection, treatment, and prevention advancements. By harnessing the potential of human-AI collaboration, healthcare can become more precise, personalized, and effective, ultimately enhancing the quality of care and patient experience (Xu et al., 2024).

4.5.1. Real-Time Monitoring

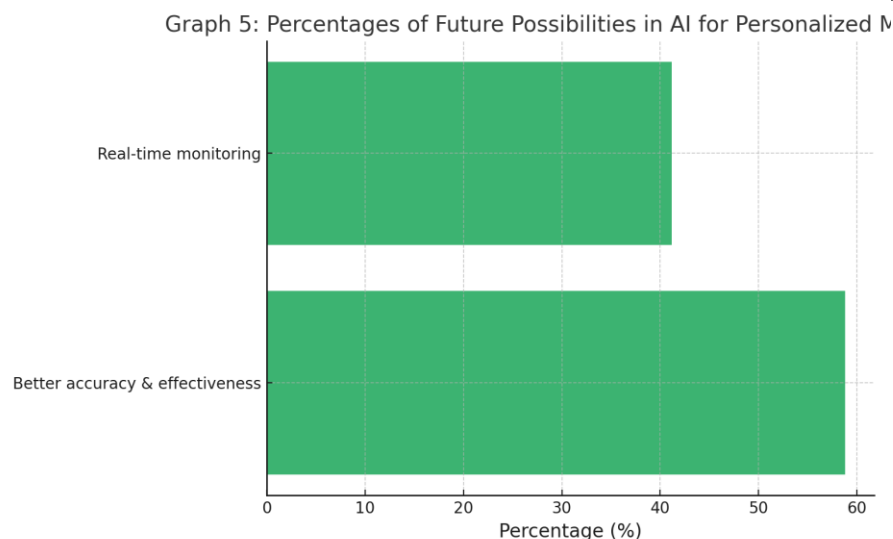
The future of AI in healthcare is poised to revolutionize patient care through real-time monitoring via wearables, enabling proactive disease management and timely interventions. By harnessing the power of wearables and AI-driven analytics, healthcare professionals can track patient health in real time, identify potential issues before they escalate, and intervene early to prevent complications. This proactive approach can improve health outcomes, patient engagement, and more effective disease management. With AI-powered wearables, patients can take a more active role in their healthcare, and clinicians can provide more personalized and responsive care. Healthcare can become more preventive, predictive, and patient-centered by leveraging the insights generated by wearables and AI (Perlekar & Desai, 2025). AI-powered wearables are revolutionizing personalized healthcare by facilitating real-time data analysis and early detection of health issues. By continuously monitoring vital signs and tracking health metrics, these wearables can identify potential problems before they become serious, enabling early interventions and improving health outcomes. This technology can transform healthcare delivery, making it more proactive, preventive, and patient-centered. With AI-driven insights, patients and

clinicians can work together to address health issues promptly, reducing the risk of complications and improving overall well-being. By leveraging the power of AI-powered wearables, individuals can take a more active role in managing their health, and healthcare providers can deliver more effective, personalized care. This convergence of technology and healthcare is poised to redefine the patient experience, making it more convenient, accessible, and effective. (Etli et al., 2024; Perlekar & Desai, 2025). We can enhance patient monitoring by facilitating precise, data-driven, and patient-specific treatment strategies. By analyzing vast amounts of data, including genetic profiles, medical histories, and lifestyle factors, AI can help clinicians develop targeted treatment plans tailored to individual patients' unique needs. This approach enables healthcare providers to deliver more effective, efficient, and personalized care, improving patient outcomes and quality of life. With AI-driven insights, clinicians can identify the most promising treatments, anticipate potential side effects, and adjust care plans accordingly. By harnessing the power of AI in personalized medicine, healthcare is becoming more precise, predictive, and patient-centered, ultimately revolutionizing how care is delivered and experienced (Perlekar & Desai, 2025).

Table 4.3. Future Possibilities of AI in personalized medicine

| Theme | Future Possibilities | |
|--------------------|---------------------------------|----------------------|
| Codes | Better Accuracy & Effectiveness | Real Time Monitoring |
| Frequency | 10 | 7 |
| Percentage | 58.82% | 41.17% |
| Overall Percentage | 17.52% | |

Overall percentages show the future possibilities of AI in personalized medicine according to the reviewed articles.



Graph 4.3. Future Possibilities of AI in personalized medicine

5. Conclusion

The advent of artificial intelligence (AI) in healthcare has ushered in a new era of personalized medicine, where treatments are tailored to an individual's unique genetic, molecular, and lifestyle profiles. By harnessing the power of AI-driven innovations, healthcare is evolving to become more proactive, precise, and patient-centered. Integrating AI in healthcare can revolutionize disease prediction, patient monitoring, and targeted treatment, enabling clinicians to deliver more effective and efficient care. However, the widespread adoption of AI in healthcare is contingent upon addressing pressing challenges, including ethical dilemmas, data security concerns, algorithmic transparency, and cost barriers. To overcome these hurdles, sustained interdisciplinary collaboration, regulatory clarity, and technological refinement are essential. By working together, healthcare professionals, policymakers, and industry leaders can ensure that AI is implemented responsibly and sustainably. As AI continues transforming healthcare, it is crucial to prioritize transparency, accountability, and patient-centeredness. By doing so, we can unlock the full potential of AI-driven healthcare, enabling clinicians to deliver more precise, predictive, and personalized care. The future of healthcare is poised to be shaped by AI, and we must harness its potential to improve patient outcomes, enhance healthcare efficiency, and reduce costs. Ultimately, the integration of AI in

healthcare has the potential to redefine modern medicine, shifting the focus from reactive care to predictive, personalized solutions. By leveraging AI-driven innovations, we can create a more sustainable, effective, patient-centered healthcare system where individuals receive tailored treatments that address their unique needs and circumstances. As we move forward, we must prioritize responsible AI implementation, ensuring its benefits are equally distributed, and its risks are carefully managed. Doing so can create a brighter future for healthcare, where AI-driven solutions improve patient outcomes, enhance quality of life, and transform the healthcare experience.

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