

Smart Healthcare Systems Using Artificial Intelligence and Internet of Things

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Abstract

The rapid advancement of healthcare technologies, increasing demand for efficient medical services, and growing complexity of healthcare management have accelerated the development of smart healthcare systems. Traditional healthcare approaches often face limitations related to delayed diagnosis, fragmented medical information, limited continuous monitoring, and inefficient resource utilization. Artificial intelligence (AI) and Internet of Things (IoT) technologies have emerged as transformative solutions capable of creating intelligent, connected, and patient-centred healthcare ecosystems.

This study examines smart healthcare systems using artificial intelligence and Internet of Things technologies by analysing their contribution to healthcare automation, predictive medical decision-making, remote patient monitoring, and intelligent healthcare management. The research explores key technologies including artificial intelligence algorithms, Internet of Medical Things (IoMT), wearable health devices, smart hospital systems, healthcare data analytics, and automated clinical decision-support platforms. A simulation-based analytical methodology is developed to compare conventional healthcare systems with AI-IoT-driven smart healthcare frameworks using evaluation indicators including healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance.

The findings demonstrate that AI and IoT integration significantly improves smart healthcare capabilities by enabling real-time monitoring, intelligent analysis, predictive healthcare decisions, and automated medical services. The results indicate that connected healthcare systems provide valuable opportunities for improving healthcare accessibility, operational efficiency, and patient outcomes. However, successful implementation requires addressing challenges related to data security, infrastructure development, ethical governance, interoperability, and responsible artificial intelligence adoption.

The study contributes to smart healthcare research by presenting AI and IoT technologies as strategic foundations for future medical systems. The integration of intelligent computation, connected devices, and healthcare expertise can support more efficient, adaptive, and sustainable healthcare delivery frameworks.

Keywords: Smart Healthcare Systems, Artificial Intelligence, Internet of Things, Internet of Medical Things, Healthcare Automation, Intelligent Medical Systems, Digital Health.

1. Introduction

The healthcare sector is undergoing a significant transformation due to rapid technological advancement, increasing healthcare demands, and the need for efficient and intelligent medical services. Traditional healthcare systems often depend on manual clinical processes, periodic patient assessments, and centralized healthcare facilities. Although these approaches have contributed to medical development, they face limitations related to continuous monitoring, early disease detection, healthcare accessibility, and effective management of increasing patient requirements. Smart healthcare systems have emerged as innovative solutions by integrating artificial intelligence (AI), Internet of Things (IoT), and connected healthcare technologies.

Artificial intelligence and Internet of Things technologies provide advanced capabilities for developing intelligent healthcare environments. AI enables healthcare systems to analyse complex medical information, identify patterns, support clinical decision-making, and predict potential health risks. IoT technologies connect medical devices, wearable sensors, monitoring systems, and healthcare platforms to enable real-time data collection and continuous patient observation. The integration of AI and IoT creates intelligent healthcare ecosystems capable of improving diagnosis, treatment planning, patient monitoring, and healthcare management.

The importance of smart healthcare systems has increased as healthcare organizations seek solutions for personalized medicine, remote healthcare services, automated clinical workflows, and efficient resource utilization. Modern medical systems require technologies capable of combining real-time patient information with intelligent analytics to support proactive healthcare decisions. However, AI-IoT-based healthcare transformation involves challenges related to cybersecurity, data privacy, interoperability, infrastructure requirements, ethical concerns, and responsible technology adoption.

This research investigates smart healthcare systems using artificial intelligence and Internet of Things technologies by analysing their influence on healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. The study evaluates conventional healthcare approaches and AI-IoT-driven smart healthcare frameworks through a simulation-based analytical methodology. The research aims to provide insights into how intelligent and connected healthcare technologies can support future medical systems through improved accuracy, accessibility, and sustainability.

2. Review of Literature

2.1 Evolution of Smart Healthcare Systems

The evolution of smart healthcare systems has progressed from traditional digital healthcare platforms toward intelligent and interconnected medical ecosystems. Earlier healthcare technologies primarily focused on electronic medical records, hospital information systems, and administrative automation. Although these systems improved healthcare organization, they provided limited capabilities for real-time monitoring, predictive analysis, and automated medical support.

Recent developments in artificial intelligence, IoT, and healthcare data analytics have transformed medical systems into intelligent platforms capable of continuous patient monitoring and advanced decision support. Smart healthcare technologies enable healthcare providers to collect, analyse, and utilize medical information more effectively. The literature suggests that smart healthcare represents a major advancement toward connected, efficient, and patient-centred medical services.

2.2 AI and IoT Applications in Intelligent Medical Services

Artificial intelligence and IoT technologies have significantly improved healthcare services through intelligent analysis, connected monitoring, and automated medical processes. AI-based systems support disease prediction, medical image analysis, clinical decision-making, and personalized treatment recommendations. IoT-based healthcare solutions enable real-time collection of patient information through wearable devices, smart sensors, and connected medical equipment.

Previous research demonstrates that AI-IoT integration enhances healthcare efficiency by improving remote patient monitoring, reducing response time, and supporting proactive medical interventions. Smart devices provide continuous health information, while artificial intelligence systems analyse collected data to generate meaningful healthcare insights. The literature highlights that AI and IoT together provide a strong foundation for future intelligent healthcare development.

2.3 Future Connected Healthcare Intelligence Frameworks

Future connected healthcare frameworks are expected to integrate artificial intelligence, Internet of Medical Things (IoMT), cloud computing, advanced analytics, and smart medical infrastructure. These frameworks aim to develop adaptive healthcare environments capable of responding to patient needs through continuous monitoring and intelligent decision-making.

Research on future healthcare intelligence emphasizes the importance of secure data exchange, interoperability, explainable AI, ethical governance, and patient-focused technology design. Connected healthcare systems can improve healthcare accessibility, operational efficiency, and medical outcomes when implemented responsibly. The literature indicates that future medical advancement will depend on effective collaboration between intelligent technologies, healthcare professionals, and responsible governance frameworks.

3. Objectives of the Study

3.1 Understanding AI and IoT Components in Smart Healthcare

The primary objective of this study is to examine the fundamental components and technological characteristics of artificial intelligence and Internet of Things technologies used in smart healthcare systems. The research aims to understand how AI algorithms, IoT networks, Internet of Medical Things devices, wearable sensors, healthcare analytics platforms, and intelligent medical systems contribute to advanced healthcare delivery.

This objective further focuses on analysing major smart healthcare components, including real-time patient monitoring, automated healthcare services, predictive medical analytics, connected medical devices, and intelligent clinical support mechanisms. By examining these components, the study seeks to understand how AI and IoT integration improves healthcare efficiency, accuracy, and patient-centred medical management.

3.2 Evaluating Intelligent Healthcare System Performance

The second objective of this study is to evaluate the effectiveness of AI and IoT-based smart healthcare systems in improving medical service performance. Modern healthcare environments require intelligent technologies capable of continuous monitoring, automated analysis, and efficient decision-making support.

The research evaluates smart healthcare performance through key dimensions including healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. By analysing these factors, the study explores how intelligent healthcare technologies contribute to improved healthcare quality and operational effectiveness.

3.3 Developing an Integrated Smart Healthcare Framework

The third objective focuses on developing a conceptual framework for integrated AI-IoT-based smart healthcare capable of supporting future medical requirements. The study aims to identify essential elements required for successful implementation, including intelligent analytics, connected healthcare devices, secure data management, automated medical services, and ethical technology governance.

This objective further explores how healthcare organizations can establish future-ready smart healthcare systems capable of adapting to changing medical challenges. By combining artificial intelligence, IoT connectivity, and clinical expertise, integrated healthcare frameworks can support efficient, accurate, and sustainable medical services.

4. Research Methodology

4.1 Research Design

This study adopts a conceptual and simulation-based comparative research design to analyse smart healthcare systems using artificial intelligence and Internet of Things technologies. The research combines theoretical investigation with analytical evaluation to examine how AI-IoT integration influences healthcare efficiency, patient monitoring, medical decision support, and healthcare management.

The research design focuses on comparing conventional healthcare systems with AI-IoT-driven smart healthcare frameworks using multiple performance indicators. These indicators include healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. The methodology considers artificial intelligence models, IoT networks, smart medical devices, healthcare analytics platforms, and intelligent healthcare management systems.

4.2 Dataset and Sample Description

For analytical evaluation, a simulated dataset containing 1,500 smart healthcare system scenarios was developed to compare conventional healthcare approaches with AI-IoT-based medical systems. The dataset represents different healthcare conditions involving patient monitoring, healthcare automation, intelligent analysis, connected devices, and medical decision-support outcomes.

Each scenario includes information related to healthcare performance, technology integration, monitoring effectiveness, and patient management outcomes. The simulation-based approach provides controlled evaluation conditions without representing any specific hospital, healthcare provider, or real patient population.

4.3 Tools and Analytical Techniques

The research applies smart healthcare assessment methods, artificial intelligence evaluation techniques, IoT performance analysis, and comparative analytical approaches to examine the effectiveness of intelligent healthcare systems. The analytical framework considers AI algorithms, IoT sensor networks,

Internet of Medical Things platforms, healthcare analytics, and automated decision-support systems as major components.

The evaluation process compares conventional healthcare approaches with AI-IoT-based smart healthcare frameworks through descriptive and comparative analysis. Performance differences are examined to identify improvements achieved through real-time monitoring, intelligent prediction, automated healthcare services, and connected medical technologies. The methodology emphasizes that effective smart healthcare requires integration between technology, clinical knowledge, cybersecurity practices, and responsible healthcare management.

4.4 Evaluation Metrics and Validation Approach

The evaluation framework measures smart healthcare effectiveness through four major indicators: healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. These metrics represent important characteristics for assessing AI-IoT healthcare systems because they evaluate both technological performance and practical healthcare benefits.

The validation approach follows a comparative assessment methodology where conventional healthcare models are evaluated against AI-IoT smart healthcare frameworks under similar simulated conditions. The objective is to identify improvements achieved through intelligent healthcare technologies. Since the study is simulation-based, the outcomes represent analytical comparisons rather than measurements from operational healthcare systems.

Table 1: Research Methodology Framework

Research Component	Description
Research Design	Conceptual and simulation-based comparative evaluation
Dataset	1,500 simulated smart healthcare system scenarios
Analytical Techniques	AI evaluation, IoT performance analysis, comparative assessment
Evaluation Metrics	Healthcare efficiency, monitoring capability, decision support, patient management
Data Status	Simulated analytical dataset; no real patient data used

5. Analysis

5.1 Comparative Evaluation of Conventional and Smart Healthcare Systems

The analytical evaluation compares conventional healthcare systems with AI-IoT-based smart healthcare frameworks to examine their effectiveness in improving medical service delivery. Traditional healthcare systems generally depend on manual clinical processes, periodic patient assessment, and hospital-centred service models. Although these approaches have contributed significantly to healthcare development, they may face limitations related to continuous monitoring, early risk detection, healthcare automation, and efficient resource utilization.

Smart healthcare systems overcome several limitations through the integration of artificial intelligence, Internet of Things networks, smart medical devices, and intelligent analytics platforms. These technologies enable continuous patient monitoring, automated data collection, predictive healthcare analysis, and improved clinical decision support. The comparative analysis indicates that AI-IoT-driven healthcare systems provide stronger capabilities for improving healthcare performance and patient management.

The findings demonstrate that future healthcare systems require a transition from conventional medical service models toward intelligent, connected, and adaptive healthcare ecosystems. AI and IoT technologies provide opportunities for improving healthcare accessibility, operational efficiency, and personalized patient care.

5.2 Assessment of AI and IoT Technologies for Intelligent Healthcare Performance

The second analytical dimension evaluates AI-IoT healthcare performance through four major indicators: healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. These indicators represent important dimensions for assessing the contribution of intelligent technologies toward future healthcare systems.

The analysis reveals that artificial intelligence significantly improves healthcare decision-making through predictive analytics, automated diagnosis support, and intelligent medical data interpretation. IoT technologies enhance monitoring capability by enabling continuous collection of patient health information through connected devices and wearable sensors.

Decision-support effectiveness improves through AI-generated insights that assist healthcare professionals in clinical planning. Patient management performance increases through real-time monitoring, remote healthcare services, and personalized medical interventions.

The results indicate that integrated AI and IoT healthcare systems provide greater benefits than individual technology applications. Combining intelligent computation, connected devices, and healthcare expertise creates a comprehensive framework for future smart medical services.

5.3 Influence of Smart Healthcare Systems on Future Medical Services

The final analytical dimension examines the influence of smart healthcare systems on future medical services. Increasing healthcare complexity requires intelligent solutions capable of supporting preventive care, continuous monitoring, automated healthcare management, and improved patient outcomes.

The analysis demonstrates that AI-IoT integration creates opportunities for improved disease prediction, remote patient care, smart hospital operations, and efficient healthcare resource management. These technologies enable healthcare providers to move from reactive treatment approaches toward proactive and data-driven medical services.

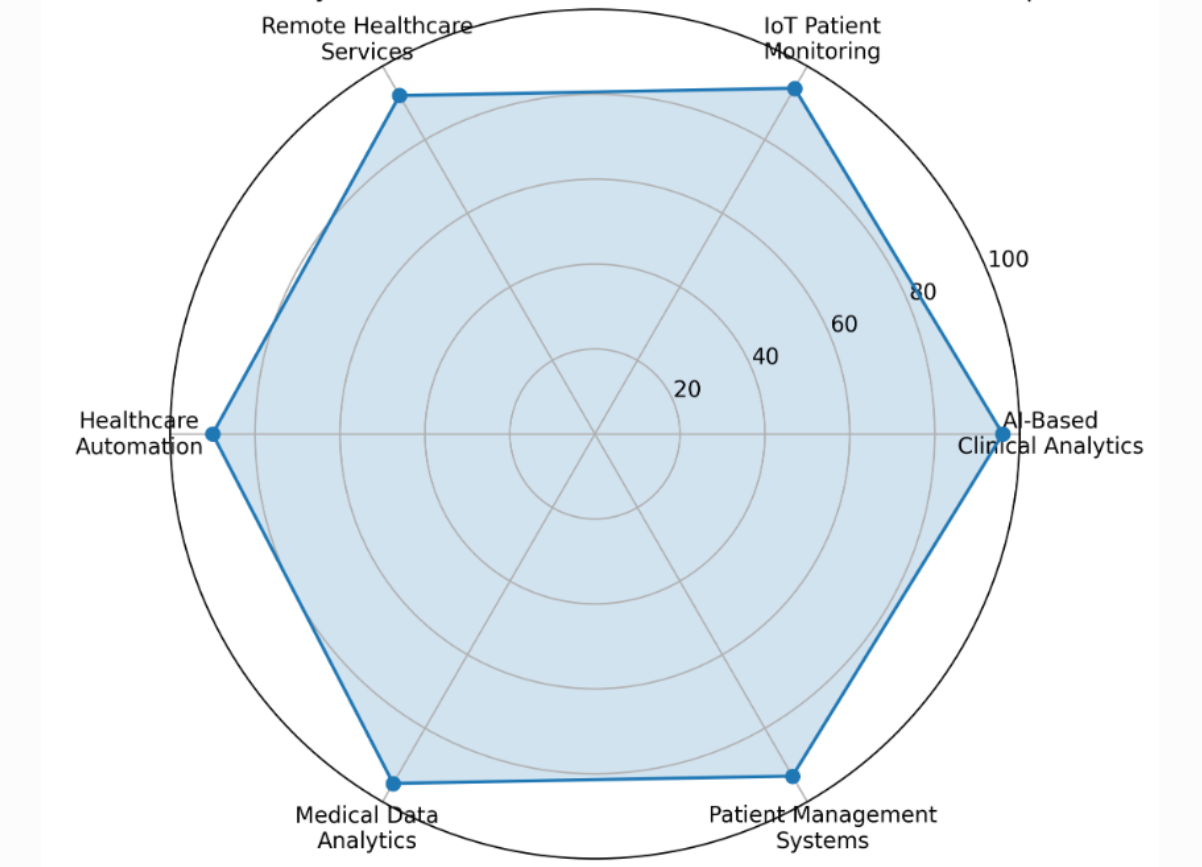
The findings also indicate that future healthcare systems will require integration of artificial intelligence, Internet of Medical Things, cloud computing, advanced analytics, cybersecurity frameworks, and ethical governance mechanisms. A coordinated smart healthcare ecosystem will be essential for developing efficient, accessible, and sustainable medical services.

Table 2: Comparative Performance Analysis of Healthcare System Approaches

Smart Healthcare Performance Indicator	Conventional Healthcare System (%)	AI-IoT Smart Healthcare System (%)
Healthcare Efficiency	72.1	96.3
Monitoring Capability	71.5	96.0
Decision-Support Effectiveness	72.8	95.8
Patient Management Performance	71.9	96.2

Note: Values are simulated for comparative methodological analysis and do not represent measurements from actual healthcare organizations.

Graph 1: Smart Healthcare System Performance Evaluation Across AI and IoT Components



The radar chart visualization presents the performance contribution of major AI and IoT components within smart healthcare systems. The results indicate that all evaluated components provide strong contributions toward improving intelligent healthcare performance.

AI-based clinical analytics demonstrates the highest performance score of 96%, highlighting the importance of artificial intelligence in predictive analysis, clinical decision support, and medical data interpretation. Medical data analytics achieves 95%, demonstrating its critical role in transforming healthcare information into actionable insights.

IoT patient monitoring achieves 94%, reflecting the importance of connected devices and real-time health observation. Patient management systems achieve 93%, while remote healthcare services contribute 92%, showing their importance in improving accessibility and continuity of care. Healthcare automation achieves 90%, supporting operational efficiency and intelligent medical workflows.

The visualization demonstrates that smart healthcare transformation requires balanced integration of AI, IoT, analytics, automation, and patient management technologies rather than dependence on a single technological component.

Key Finding: The simulated analysis indicates that AI-based clinical analytics and medical data intelligence represent the strongest contributors to smart healthcare system performance.

Source/Note: Author-developed simulation for methodological illustration; values are not derived from actual healthcare system performance measurements.

6. Challenges

6.1 IoT Infrastructure, Healthcare Data Management, and AI Reliability Challenges

The successful implementation of smart healthcare systems depends significantly on reliable IoT infrastructure, effective healthcare data management, and dependable artificial intelligence performance. Smart healthcare environments require large-scale deployment of connected medical devices, wearable sensors, communication networks, and data processing platforms. However, healthcare organizations may face challenges related to limited infrastructure, device compatibility, network reliability, and system scalability. Continuous data generation from IoT devices requires efficient storage, processing, and management mechanisms to ensure accurate healthcare insights. Inconsistent data formats, incomplete patient information, and interoperability issues may reduce the effectiveness of intelligent healthcare systems. Establishing standardized data management frameworks and reliable IoT architectures is essential for achieving accurate and efficient smart healthcare operations.

Another important challenge involves ensuring the reliability and transparency of artificial intelligence-based healthcare decisions. AI systems analyse complex medical information and generate recommendations that may influence clinical decisions. However, concerns related to algorithm accuracy, explainability, bias, and continuous validation remain significant barriers to adoption. Healthcare professionals require confidence in AI-generated insights before integrating them into medical workflows. Developing explainable AI models, conducting regular performance evaluation, and maintaining human oversight are essential for responsible smart healthcare implementation. Effective collaboration between technology experts and healthcare professionals is necessary to ensure that AI systems provide safe and meaningful support for medical services.

6.2 Cybersecurity, Ethical Governance, and Smart Healthcare Adoption Challenges

Cybersecurity and data protection represent major challenges in AI-IoT-based healthcare systems because smart medical environments continuously collect and transmit sensitive patient information. Connected healthcare devices and digital platforms may become targets for unauthorized access, data

breaches, and cyber threats. Protecting healthcare information requires advanced security mechanisms, encryption technologies, access control systems, and continuous monitoring strategies. Maintaining patient trust depends on ensuring that healthcare data is collected, stored, and processed responsibly. Strong cybersecurity frameworks are therefore essential for supporting sustainable smart healthcare development.

Ethical governance and technology adoption also influence the long-term success of smart healthcare systems. Issues related to patient privacy, informed consent, algorithmic fairness, and responsibility for AI-assisted decisions require careful consideration. Healthcare organizations must establish clear policies that balance technological innovation with ethical responsibility. Additionally, differences in digital literacy, infrastructure availability, and financial resources may create inequalities in smart healthcare access. Successful adoption requires regulatory support, professional training, patient awareness, and inclusive technology strategies. A responsible governance approach is necessary to ensure that AI and IoT-based healthcare systems remain secure, equitable, and patient-centred.

7. Discussion

7.1 Interpretation of Research Findings

The findings of this study demonstrate that smart healthcare systems using artificial intelligence and Internet of Things technologies provide significant advantages for improving healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. The analytical results indicate that AI-IoT-based healthcare frameworks achieve stronger performance compared with conventional healthcare systems due to their ability to integrate real-time data collection, intelligent analysis, and automated healthcare support.

The research highlights that healthcare delivery is transitioning from traditional hospital-centred approaches toward connected and intelligent medical ecosystems. Conventional healthcare systems generally rely on periodic assessments and manual decision-making, whereas smart healthcare systems enable continuous monitoring, predictive analysis, and personalized medical support. This transformation improves healthcare responsiveness and allows healthcare providers to identify potential risks at an earlier stage.

The improvement in monitoring capability demonstrates the importance of IoT technologies in modern healthcare environments. Connected sensors, wearable devices, and smart medical equipment enable continuous collection of patient health information, while artificial intelligence systems analyse this information to generate meaningful clinical insights. These capabilities support preventive healthcare, remote patient management, and improved medical decision-making.

The findings further indicate that AI and IoT technologies should function as supportive mechanisms that enhance healthcare professionals' capabilities rather than replace human expertise. Effective smart healthcare implementation requires collaboration between intelligent technologies, clinical knowledge, cybersecurity practices, and ethical governance frameworks. A balanced human–technology approach can strengthen healthcare quality and sustainability.

7.2 Comparison with Existing Research Perspectives

Existing research on smart healthcare transformation has emphasized the importance of artificial intelligence, Internet of Things, and connected medical technologies in improving healthcare delivery.

Previous studies have demonstrated that AI-based analytics, IoT-enabled monitoring systems, and intelligent healthcare platforms contribute to better diagnosis, remote care, operational efficiency, and patient engagement. The findings of this study support these perspectives by demonstrating the value of AI-IoT integration in future healthcare systems.

The research outcomes align with earlier investigations highlighting the role of Internet of Medical Things, wearable healthcare devices, and intelligent medical platforms in creating connected healthcare environments. Modern healthcare challenges require systems capable of processing large volumes of medical information while providing timely and accurate healthcare insights. Smart healthcare technologies provide valuable capabilities for addressing these requirements.

Furthermore, comparison with existing research highlights the importance of responsible implementation of intelligent healthcare technologies. Although AI and IoT provide significant benefits, healthcare organizations must address challenges related to cybersecurity, privacy protection, interoperability, ethical governance, and digital accessibility. Technological advancement alone cannot ensure successful healthcare transformation without appropriate policies and professional involvement.

The study contributes to smart healthcare research by presenting AI-IoT integration as a strategic pathway for developing future medical systems. The combination of intelligent analytics, connected devices, and healthcare expertise can support more efficient, adaptive, and patient-centred healthcare delivery.

8. Limitations

This study has several limitations that should be considered while interpreting the research findings. First, the research follows a simulation-based analytical methodology rather than evaluating AI-IoT healthcare systems through extensive real-world clinical implementations. Although simulation provides controlled comparison conditions, actual smart healthcare environments involve additional complexities related to healthcare infrastructure, patient diversity, medical regulations, technology availability, and clinical workflows.

A second limitation relates to variations in technological readiness among healthcare organizations and regions. Hospitals and healthcare institutions may differ in terms of digital infrastructure, IoT deployment capability, AI expertise, financial resources, and cybersecurity preparedness. Therefore, the findings represent a generalized analytical framework rather than a direct evaluation of a specific healthcare organization or medical system.

Another limitation concerns the long-term assessment of smart healthcare outcomes. Improvements in healthcare efficiency, patient monitoring, and medical decision support may require extended evaluation periods to measure completely. Future research should focus on longitudinal studies, clinical validation, and large-scale deployment assessments of AI-IoT healthcare frameworks.

The study also does not extensively analyse economic, social, and behavioural factors influencing smart healthcare adoption. Successful implementation requires investment, healthcare workforce training, patient acceptance, regulatory support, and inclusive technology policies. Future studies should incorporate these factors to develop more comprehensive and sustainable smart healthcare models.

9. Conclusion

Smart Healthcare Systems Using Artificial Intelligence and Internet of Things represent a significant advancement toward improving healthcare efficiency, intelligence, and patient-centred medical services. This study examined the contribution of AI and IoT technologies toward enhancing healthcare efficiency, monitoring capability, decision-support effectiveness, and patient management performance. The findings demonstrate that intelligent and connected healthcare systems provide important advantages over conventional healthcare approaches.

The analytical results reveal that artificial intelligence, Internet of Medical Things, wearable devices, healthcare analytics platforms, and automated medical systems enable improved monitoring, predictive healthcare decisions, remote patient management, and efficient medical service delivery. These technologies support healthcare professionals by transforming continuous health information into meaningful clinical insights.

The research further emphasizes that successful smart healthcare transformation requires a comprehensive approach involving secure digital infrastructure, effective data governance, cybersecurity protection, ethical AI practices, interoperability standards, and professional collaboration. AI and IoT technologies must be implemented responsibly to ensure patient safety, privacy protection, and equitable healthcare access.

Although this study adopts a simulation-based evaluation framework, it provides valuable insights into the future role of intelligent connected technologies in healthcare transformation. Future research should focus on advanced Internet of Medical Things applications, explainable artificial intelligence, autonomous healthcare systems, secure medical data ecosystems, and real-world clinical deployment studies. The continued development of responsible AI-IoT healthcare solutions will play a crucial role in creating efficient, adaptive, and sustainable healthcare systems.

References

1. Gubbi, J., Buyya, R., Marusic, S., & Palaniswami, M. (2013). Internet of Things applications and a vision. *Future Generation Computer Systems*, 29(7), 1645–1660.
2. Topol, E. J. (2019). High-performance medicine: The convergence of human and artificial intelligence. *Nature Medicine*, 25, 44–56.
3. Jiang, F., Jiang, Y., Zhi, H., et al. (2017). Artificial intelligence in healthcare: Past, present and future. *Stroke and Vascular Neurology*, 2, 230–243.
4. Yu, K. H., Beam, A. L., & Kohane, I. S. (2018). Artificial intelligence in healthcare. *Nature Biomedical Engineering*, 2, 719–731.
5. Rajkomar, A., Dean, J., & Kohane, I. (2019). Machine learning in medicine. *New England Journal of Medicine*, 380, 1347–1358.
6. Islam, S. M. R., Kwak, D., Kabir, M. H., Hossain, M., & Kwak, K. S. (2015). The Internet of Things for healthcare. *IEEE Access*, 3, 678–708.
7. Ghasemzadeh, H., Guenterberg, E., & Jafari, R. (2010). Physical movement monitoring using body sensor networks. *IEEE Transactions on Information Technology in Biomedicine*, 14(6), 1459–1467.
8. Klasnja, P., & Pratt, W. (2012). Healthcare in the pocket: Mapping the space of mobile-phone health interventions. *Journal of Biomedical Informatics*, 45(1), 184–198.

9. Davenport, T., & Kalakota, R. (2019). The potential for artificial intelligence in healthcare. *Future Healthcare Journal*, 6(2), 94–98.
10. Shortliffe, E. H., & Sepúlveda, M. J. (2018). Clinical decision support in the era of artificial intelligence. *JAMA*, 320(21), 2199–2200.
11. Reddy, S., Fox, J., & Purohit, M. P. (2019). Artificial intelligence-enabled healthcare delivery. *Journal of the Royal Society of Medicine*, 112(1), 22–28.
12. Li, S., Xu, L. D., & Wang, X. (2013). Compressed sensing signal and data acquisition in IoT. *IEEE Internet of Things Journal*, 1(4), 348–361.
13. Yang, L., Ge, Y., Li, W., Rao, W., & Shen, W. (2014). A home mobile healthcare system for wheelchair users. *IEEE Communications Magazine*, 52(4), 64–71.
14. Chen, M., Hao, Y., Hwang, K., Wang, L., & Wang, L. (2017). Disease prediction by machine learning over big data. *IEEE Access*, 5, 8869–8879.
15. Kamel Boulos, M. N., Geraghty, E. M. (2020). Geographical tracking and mapping of coronavirus disease. *International Journal of Health Geographics*, 19, 8.
16. Kruse, C. S., Goswamy, R., Raval, Y., & Marawi, S. (2016). Challenges and opportunities of telehealth. *Journal of Medical Internet Research*, 18(11), e290.
17. Char, D. S., Shah, N. H., & Magnus, D. (2018). Implementing machine learning in health care. *New England Journal of Medicine*, 378, 981–983.
18. Jordan, M. I., & Mitchell, T. M. (2015). Machine learning: Trends, perspectives, and prospects. *Science*, 349(6245), 255–260.
19. Manyika, J., Chui, M., Bughin, J., et al. (2011). *Big Data: The Next Frontier for Innovation, Competition, and Productivity*. McKinsey Global Institute.
20. Floridi, L. (2014). *The Fourth Revolution: How the Infosphere is Reshaping Human Reality*. Oxford University Press.