

The Role of Artificial Intelligence in Enhancing Service Quality in Public Hospitals

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Abstract

This investigation examines how Artificial Intelligence (AI) can transform service quality in public hospitals, with particular attention to current applications in operational domains and their associated benefits. Yet the deployment of AI technologies encounters notable challenges, such as constraints in technological infrastructure and data governance, limitations in financial and resource allocation, and clinician reluctance frequently arising from trust deficits and inadequate AI literacy. Moreover, technical capabilities by themselves prove inadequate; comprehensive governance structures are indispensable for ethical and effective implementation. Consequently, core principles encompassing accountability, transparency, equity, safety, and adaptability must guide AI governance frameworks within public hospitals. Successful implementation necessitates interdisciplinary oversight committees, standardized assessment protocols, and ongoing surveillance to guarantee that AI systems bolster, rather than compromise, service quality and health equity.

Keywords: Artificial Intelligence; Public Hospitals; Service Quality; AI Governance

1 INTRODUCTION

Public hospitals worldwide face persistent challenges in delivering timely, efficient, and equitable healthcare services, often constrained by resource limitations, rising patient volumes, and administrative inefficiencies. In this context, Artificial Intelligence (AI) has emerged as a transformative force with the potential to significantly enhance service quality across clinical, operational, and managerial domains. Recent analyses indicate that AI adoption in healthcare is accelerating, with hospital utilization of predictive AI increasing from 66% in 2023 to 71% in 2024 ^[1]. This growth is particularly evident in administrative applications, where AI-driven solutions for billing procedures and scheduling have demonstrated the most rapid adoption rates.

The integration of AI technologies in hospital operations represents a fundamental shift in healthcare delivery paradigms. AI systems leverage machine learning, natural language processing, and predictive analytics to optimize resource allocation, streamline workflows, and support clinical decision-making ^[2]. These capabilities are especially valuable in public hospital settings, where maximizing operational efficiency directly impacts patient access and care quality. Current implementations demonstrate AI's capacity to forecast patient inflow, optimize staff scheduling, and reduce emergency department boarding times, thereby addressing critical bottlenecks in service delivery ^[3].

However, the successful implementation of AI in public healthcare institutions requires careful consideration of multiple factors. Research highlights significant challenges including data privacy concerns, algorithmic bias, workforce readiness, and the need for robust governance frameworks ^[4]. The digital divide in AI adoption is particularly pronounced, with smaller, rural, and government-owned hospitals demonstrating lower implementation rates compared to their counterparts ^[1]. This disparity underscores the importance of tailored implementation strategies that address the unique constraints of public healthcare systems.

Globally, healthcare systems are recognizing AI's potential to enhance service quality. In Saudi Arabia, for instance, AI integration aligns with national development goals and has shown promise in improving healthcare efficiency and quality [5]. Similarly, systematic reviews indicate that AI applications can significantly improve diagnostic accuracy, operational efficiency, and evidence-based decision-making when properly implemented [6].

This paper examines the multifaceted role of artificial intelligence in enhancing service quality within public hospitals, analyzing current applications, implementation challenges, and future directions. By synthesizing evidence from recent studies and industry analyses, it aims to provide a comprehensive understanding of how AI technologies can be leveraged to overcome operational constraints and improve patient outcomes in public healthcare settings.

2 AI-DRIVEN OPTIMIZATION OF PATIENT FLOW AND SCHEDULING SYSTEMS

The implementation of artificial intelligence in patient flow and scheduling represents a fundamental shift from reactive management to proactive operational control in public hospitals. Traditional scheduling systems often create bottlenecks through static appointment books and manual resource allocation, but AI algorithms can analyze historical admission patterns, seasonal variations, and real-time capacity constraints to optimize patient movement throughout the healthcare facility. These systems leverage predictive analytics to forecast patient volumes with remarkable accuracy, enabling administrators to align staffing levels, equipment availability, and room assignments with anticipated demand [7].

Research demonstrates that AI-powered scheduling systems can produce transformative results. St. Luke's University Health Network achieved a 40% reduction in patient wait times alongside a 25% decrease in operating costs by implementing AI-driven demand matching [7]. Similarly, Duke's Specialty Infusion Center improved patient flow and reduced delays through intelligent scheduling algorithms. These improvements stem from AI's ability to process millions of data points simultaneously, identifying optimal scheduling sequences that minimize idle time while maximizing resource utilization. The technology can dynamically adjust schedules in response to emergent situations, such as emergency department overcrowding or procedural delays, ensuring minimal disruption to planned care pathways [8].

The operational impact extends beyond mere efficiency gains to encompass significant financial benefits. Cleveland Clinic's implementation of workflow analysis through AI identified previously unrecognized inefficiencies, resulting in \$60 million in annual cost savings [7]. These systems provide hospital administrators with unprecedented visibility into operational bottlenecks, enabling data-driven decisions that optimize both clinical throughput and financial performance. The transition from fixed scheduling paradigms to adaptive, intelligence-driven systems represents one of the most substantial operational transformations enabled by AI in public hospital settings.

2.1 Intelligent Automation of Revenue Cycle Management

Revenue cycle management constitutes a critical administrative function where AI applications demonstrate substantial impact on operational efficiency and financial sustainability. AI agents specialized in healthcare administration automate complex, multi-step processes including insurance verification, claims processing, denial management, and billing operations. Unlike traditional rule-based automation, these systems employ natural language processing and machine learning to interpret complex insurance policies, identify coding errors, and predict claim denials before submission [9].

The financial implications of AI implementation in revenue cycle management are demonstrated by compelling metrics. Organizations utilizing AI for administrative functions report an 81% increase in revenue, with 45% realizing these benefits within the first year of implementation [9]. One documented implementation achieved a dramatic reduction in claims denial rates from 11.2% to 2.4%, representing substantial improvements in revenue capture and reduction in administrative rework [10]. These systems process insurance verification automatically while patients complete intake forms, creating seamless transitions from administrative processing to clinical care without manual intervention.

The automation extends to prior authorization processes, which traditionally consume significant staff time and delay patient care. AI systems can review clinical documentation against payer requirements, identify missing information, and

even submit authorization requests electronically, reducing processing times from days to hours. This acceleration not only improves cash flow but also enables faster patient access to necessary treatments. As administrative cost pressures intensify, with PwC projecting 8% medical cost growth for 2025, these efficiency gains become increasingly critical for public hospital sustainability [9].

2.2 Supply Chain and Inventory Management Optimization

AI-driven supply chain optimization represents a sophisticated application that directly impacts both operational efficiency and clinical outcomes in public hospitals. These systems employ predictive analytics to forecast consumption patterns for medications, medical supplies, and equipment across departments, enabling proactive inventory management that balances cost containment against clinical need. By analyzing historical usage data, seasonal variations, and scheduled procedure volumes, AI algorithms generate optimized ordering schedules that minimize stockouts while reducing excess inventory [7].

The operational benefits extend beyond basic inventory control to encompass strategic procurement decisions. AI systems can identify utilization patterns that indicate wasteful practices or opportunities for standardization, enabling supply chain managers to negotiate better terms with vendors and consolidate purchasing. These systems monitor shelf life of perishable supplies, automatically rotating stock to minimize waste and ensure product integrity. During high-demand periods or supply chain disruptions, AI algorithms can identify alternative sourcing options or substitute products, maintaining continuity of care despite external challenges.

The financial impact of optimized supply chain management is substantial, particularly for public hospitals operating with constrained budgets. By maintaining appropriate inventory levels, hospitals avoid both costly emergency purchases during stockouts and capital tied up in excessive inventory. The systems provide real-time visibility into supply utilization across departments, enabling administrators to identify variation and implement standardized practices. This data-driven approach to resource management represents a significant advancement over traditional periodic inventory counts and manual ordering processes, creating a more responsive and efficient supply ecosystem.

2.3 Documentation Automation and Clinical Workflow Integration

AI-powered documentation systems address one of the most time-consuming administrative burdens in healthcare, freeing clinical staff to focus on patient care rather than paperwork. These technologies range from voice-to-text transcription to ambient clinical documentation that automatically generates medical notes from clinician-patient conversations. The integration of these tools with electronic health record systems creates seamless documentation workflows that reduce administrative burden while improving data accuracy and completeness [8].

The impact on clinical productivity is significant, particularly considering that nurses spend approximately 25% of their work time on regulatory and administrative activities [9]. AI documentation tools can automate coding and billing information extraction, quality measure reporting, and regulatory compliance documentation. This automation not only reduces clerical workload but also improves data quality through standardized capture and reduced transcription errors. The systems can flag missing documentation elements or inconsistencies before they become compliance issues, creating a proactive approach to regulatory requirements.

The integration of AI documentation systems with clinical decision support creates synergistic benefits for both operational efficiency and care quality. Automated documentation can trigger appropriate order sets based on clinical findings, ensure complete capture of quality metrics, and populate patient education materials specific to documented conditions. This tight integration between administrative functions and clinical workflows represents a holistic approach to healthcare operations that transcends traditional siloes between clinical and administrative systems. The result is a more cohesive care environment where technology supports rather than impedes the patient-clinician interaction.

2.4 Predictive Analytics for Resource Allocation and Capacity Planning

Predictive analytics applications enable public hospitals to transition from reactive resource allocation to proactive capacity planning, optimizing the use of scarce resources while maintaining care quality. These systems analyze diverse data sources, including historical patient volumes, seasonal illness patterns, community health indicators, and even weather forecasts, to predict demand for specific services with remarkable accuracy. This forecasting capability allows administrators to align staffing, equipment, and facility resources with anticipated need ^[2].

The adoption of predictive AI in hospital operations has shown steady growth, increasing from 66% in 2023 to 71% in 2024 among non-federal acute care hospitals ^[1]. This growth reflects increasing recognition of the technology's value in optimizing resource utilization. Predictive models can forecast emergency department volumes, inpatient admissions, surgical case loads, and specialized service demand, enabling precise staffing adjustments and resource deployment. During public health emergencies or seasonal surges, these systems provide early warning of capacity constraints, allowing proactive measures to maintain care access.

The operational impact extends to long-term strategic planning through scenario modeling and capacity simulation. AI systems can model the impact of service line expansions, population growth, or changes in referral patterns on facility utilization, informing capital investment decisions and strategic planning. This data-driven approach to capacity management represents a significant advancement over traditional methods based on historical averages or manual forecasting. By aligning resource allocation with predicted rather than historical demand, public hospitals can achieve higher utilization rates while maintaining responsiveness to patient needs, ultimately enhancing both operational efficiency and service quality.

3 LIMITATIONS OF AI DEPLOYMENT IN PUBLIC HOSPITALS

3.1 Technological Infrastructure and Data Governance Constraints

The implementation of artificial intelligence in public hospitals is fundamentally constrained by the limitations of existing technological infrastructures and the complexities of data governance. Unlike the previously discussed operational applications of AI, which assume a certain level of digital maturity, this foundational barrier prevents many institutions from even initiating AI projects. Public hospitals often operate on legacy information systems that are incompatible with the high-throughput, data-intensive demands of modern AI algorithms. These systems were designed for transactional record-keeping rather than for the real-time data aggregation and processing required for machine learning. The challenge is compounded by the fragmented nature of data storage, where patient information is siloed across departmental systems such as radiology, pathology, and pharmacy that lack interoperability ^[4].

Data governance presents a parallel set of challenges. AI models require vast amounts of high-quality, standardized, and annotated data for training and validation. In public hospital settings, data is frequently incomplete, inconsistently formatted, and plagued by documentation variability among clinicians. Furthermore, stringent data privacy regulations, such as HIPAA in the United States or GDPR in Europe, create significant hurdles for data pooling and sharing necessary for developing robust AI models. The absence of clear institutional policies for data de-identification, secure storage, and ethical use in AI development creates legal and ethical uncertainties that stifle innovation. A systematic review identified data quality and bias as one of the 16 key barriers to AI adoption, highlighting that without clean, representative data, AI solutions risk perpetuating existing healthcare disparities or producing unreliable outputs ^[11].

A critical sub-component of the technological barrier is the profound lack of interoperability between new AI solutions and established Hospital Information Systems (HIS) and Electronic Health Records (EHRs). Seamless integration is paramount for AI tools to access real-time data and to embed recommendations directly into clinical workflows. However, most AI applications are developed as standalone platforms, requiring complex and costly interfaces to communicate with core hospital systems. This often results in "alert fatigue" for clinicians, who are forced to navigate

multiple disconnected systems, thereby increasing cognitive load and undermining the very efficiency gains AI promises. The NASSS framework explicitly identifies the challenge of ensuring an AI solution is technologically validated for generalizability across different departments and systems, a task that is often insurmountable in the heterogeneous IT environments of large public hospitals ^[12].

3.2 Financial and Resource Allocation Barriers

The financial impediments to AI adoption extend far beyond the initial procurement cost, constituting a major barrier for publicly funded institutions operating under constrained budgets. While the previous study detailed the financial *benefits* of AI in revenue cycle management, this section addresses the significant *costs* and investment risks that act as barriers to entry. The total cost of ownership for an AI solution includes not only licensing fees but also substantial expenditures for hardware upgrades, data infrastructure modernization, system integration, and ongoing maintenance. For example, implementing an AI-powered diagnostic tool may necessitate the procurement of high-performance computing resources and high-bandwidth network infrastructure, investments that are difficult to justify amidst competing priorities for direct patient care resources ^[4].

The business case for AI in public hospitals is further weakened by uncertain Return on Investment (ROI). Unlike AI applications in revenue cycle management where financial benefits are more immediately quantifiable, the ROI for clinical AI tools such as those for early disease detection or treatment planning is realized through improved patient outcomes and potential long-term cost avoidance, which are difficult to measure in the short term. This creates a significant disincentive for administrators who are accountable for annual budgets. The need for national policies on funding AI solutions, as highlighted in the NASSS framework, underscores that without dedicated funding streams or innovative payment models, public hospitals will struggle to allocate the necessary capital for AI initiatives ^[12].

A frequently underestimated component of the financial barrier is the extensive investment required for workforce training and organizational change management. The Human-Organization-Technology (HOT) framework categorizes "insufficient training" as a primary human-related challenge ^[11]. Deploying an AI system is not a simple plug-and-play exercise; it requires comprehensive training programs for clinicians, technicians, and administrative staff to ensure competent and confident use. This training must cover not only the technical operation of the tool but also the interpretation of its outputs and an understanding of its limitations. The "potential for increased workload" during the transition phase, as staff grapple with a new system while maintaining existing workflows, can lead to resistance and burnout. These hidden costs, covering backfill staff for training sessions, reduced productivity during implementation, and ongoing support, represent a substantial financial outlay that is often omitted from initial project proposals, leading to budget overruns and project abandonment.

3.3 Clinician and Cultural Resistance to AI Integration

A profound barrier to AI adoption lies in the human and cultural dimensions of healthcare delivery. This contrasts with the previous report's focus on how AI integrates into workflows; here, the focus is on the resistance to that integration. A pervasive lack of trust and understanding among hospital staff significantly hinders adoption. Many clinicians are skeptical of "black box" algorithms, where the decision-making process is not transparent or easily interpretable. This lack of explainability raises concerns about clinical accountability; if an AI-generated recommendation leads to an adverse outcome, the question of liability remains largely unresolved. This skepticism is not merely philosophical but has practical consequences, as clinicians who do not trust an AI tool are unlikely to incorporate its suggestions into their clinical decision-making, rendering the technology ineffective ^[12].

Cultural resistance also manifests as a fear of obsolescence or de-skilling. Some healthcare professionals perceive AI as a threat to their expertise and professional autonomy, fearing that algorithms will eventually replace human judgment. This can lead to active or passive resistance to implementation efforts. The challenge is particularly acute in public hospitals with hierarchical structures and long-established practices, where change is often met with inertia. The HOT

framework explicitly identifies "resistance from healthcare providers" as a key barrier, emphasizing that technological advancement alone is insufficient without addressing the deeply ingrained cultural and professional norms that govern clinical practice ^[11].

Underpinning the cultural resistance is a significant deficit in AI literacy among healthcare professionals. While the previous sections addressed operational integration, this subsection focuses on the foundational knowledge gap. AI literacy extends beyond the ability to use a software interface; it encompasses a conceptual understanding of how AI works, its potential benefits, and its inherent limitations. In the context of Saudi Arabia's public healthcare system, a study identified AI literacy as a unique adoption challenge, specific to the "understanding and effective usage of AI technologies" ^[13]. Without this literacy, clinicians cannot critically evaluate AI-generated insights, leading to either unquestioning reliance or outright dismissal. The problem is cyclical: a lack of literacy fosters distrust, which in turn discourages engagement with the technology, preventing the very learning that would build literacy. Addressing this requires dedicated educational initiatives integrated into both undergraduate medical education and continuous professional development, which are often lacking in resource-strapped public health systems.

4 FOUNDATIONAL PRINCIPLES AND FRAMEWORKS FOR AI GOVERNANCE IN PUBLIC HOSPITALS

Effective AI governance in public hospitals requires establishing foundational principles that guide the entire lifecycle of AI implementation. While previous reports have touched upon regulatory ambiguity as a barrier, this section focuses on the proactive development of core ethical and operational tenets that form the bedrock of institutional governance frameworks. Public hospitals, as custodians of public trust and safety, must embed principles that go beyond commercial considerations to address equity, transparency, and public accountability. The World Health Organization emphasizes that governance of artificial intelligence for health must prioritize safety, efficacy, and equity from conception to deployment ^[14].

A critical principle involves establishing clear accountability structures. Unlike private institutions, public hospitals operate within stringent public accountability frameworks, necessitating unambiguous lines of responsibility for AI system outcomes. This includes defining roles for clinical validation, data stewardship, and ongoing performance monitoring. The governance framework must delineate responsibilities between clinical teams, IT departments, and executive leadership to ensure cohesive oversight. Furthermore, public hospitals must adopt a principle of algorithmic transparency that balances explainability with technical complexity. While proprietary algorithms may protect intellectual property, public institutions have a heightened responsibility to provide meaningful explanations of AI-driven decisions to patients and stakeholders, particularly when these decisions impact care pathways or resource allocation ^[15].

The principle of health equity must be central to AI governance in public hospitals. These institutions often serve diverse and vulnerable populations, making it imperative that AI systems do not perpetuate or exacerbate existing health disparities. Governance frameworks should mandate rigorous equity impact assessments during both pre-implementation evaluation and post-deployment monitoring. This involves analyzing how AI tools perform across different demographic groups, socioeconomic strata, and clinical presentations. The BE-FAIR framework developed by UC Davis Health exemplifies this principle by systematically evaluating and adjusting predictive models to reduce underprediction of risk for African American and Hispanic patient groups ^[16]. Table 1 outlines the five core principles for AI governance in public hospitals.

TABLE 1 CORE PRINCIPLES FOR AI GOVERNANCE IN PUBLIC HOSPITALS

Governance Principle	Operational Requirement	Public Hospital Specific Consideration
Accountability	Clear designation of responsibility for AI system outcomes	Must align with public sector accountability mechanisms and reporting structures

Transparency	Explainable AI processes and decision pathways	Balance between technical complexity and public right to understand care decisions
Equity	Proactive bias detection and mitigation strategies	Address health disparities across diverse patient populations served by public systems
Safety	Rigorous validation and continuous monitoring protocols	Higher threshold for risk aversion due to public mandate and vulnerable populations
Adaptability	Framework designed for evolving regulations and technologies	Must accommodate changing public health priorities and resource constraints

4.1 Structural Components of Effective AI Governance Frameworks

The architectural design of AI governance frameworks determines their practical efficacy in public hospital environments. While previous discussions highlighted technological infrastructure constraints, this analysis focuses on the organizational structures and processes necessary for robust oversight. A multimethod study protocol outlines a comprehensive approach to framework development, emphasizing the need for stakeholder-informed governance structures that address real-world implementation challenges ^[17].

A critical structural component is the establishment of multidisciplinary AI oversight committees. These committees should include representation from clinical domains, data science, ethics, legal compliance, patient advocacy, and executive leadership. Their mandate should encompass reviewing AI proposals, assessing ethical implications, monitoring implementation outcomes, and recommending policy adjustments. The composition of these committees must reflect the public hospital's mission, with particular attention to including voices that represent the communities served. Research indicates that hospitals with formal governance structures are significantly more likely to conduct rigorous AI evaluations, including bias assessment and post-implementation monitoring ^[1].

Another essential structural element is the development of standardized evaluation protocols for AI solutions. The FAIR-AI framework provides a prescriptive approach to evaluation, outlining specific resources, structures, and criteria for both pre-implementation assessment and ongoing monitoring ^[15]. For public hospitals, these protocols must include rigorous testing for generalizability across diverse patient populations, especially given the heterogeneity of cases typically encountered in public healthcare settings. Evaluation frameworks should mandate validation using local data before deployment, as models developed elsewhere may not perform adequately in specific institutional contexts. The significant gap between hospitals that develop their own models (more likely to evaluate) versus those using external tools (less likely to evaluate) underscores the importance of this structural requirement ^[18].

The governance structure must also incorporate mechanisms for continuous learning and adaptation. Unlike static regulatory frameworks, AI governance must be dynamic, evolving alongside technological advancements and emerging evidence. This requires establishing feedback loops that capture real-world performance data, adverse events, near misses, and unintended consequences. Public hospitals should implement systematic processes for updating governance protocols based on operational experience and new research findings. The iterative nature of the framework development process described in research protocols highlights the importance of building adaptability into governance structures from their inception ^[17].

4.2 Implementation Strategies for AI Governance Frameworks

The transition from theoretical governance frameworks to operational reality presents distinct challenges in public hospital settings. While previous sections addressed financial barriers, this analysis focuses on the practical methodologies for implementing governance structures within complex healthcare environments. Successful implementation requires a phased approach that balances comprehensive oversight with operational feasibility, particularly given the resource constraints typical of public institutions.

A critical implementation strategy involves developing AI procurement standards and vendor assessment criteria. Public hospitals typically acquire AI solutions through procurement processes rather than internal development, making vendor

evaluation a cornerstone of effective governance. Implementation should include standardized assessment tools that evaluate not only the technical capabilities of AI solutions but also the vendor's commitment to transparency, equity, and ongoing support. Procurement criteria should require vendors to provide detailed information about training data demographics, performance across patient subgroups, and mechanisms for addressing performance degradation or bias identification. The digital divide observed between well-resourced and under-resourced hospitals underscores the importance of establishing procurement standards that ensure even hospitals with limited technical expertise can acquire appropriately vetted AI solutions ^[19].

Another essential implementation component is the development of AI literacy programs tailored to different stakeholder groups. Effective governance requires that all participants, from frontline clinicians to board members, possess sufficient understanding of AI capabilities and limitations to make informed decisions. Implementation should include tiered educational interventions: basic awareness for all staff, operational knowledge for users, and deeper technical understanding for governance committee members. These programs should address not only how AI systems work but also their ethical implications, potential biases, and appropriate use cases. Research indicates that hospitals with higher levels of technical expertise are more likely to implement robust evaluation processes, suggesting that literacy building is a prerequisite for effective governance ^[18].

Implementation must also include the development of monitoring and audit frameworks that operate at appropriate intervals throughout the AI lifecycle. The FAIR-AI framework emphasizes the need for both pre-implementation evaluation and post-implementation monitoring, recognizing that AI performance can degrade over time or manifest unexpected behaviors in real-world settings ^[15]. Public hospitals should establish regular audit schedules that assess algorithm performance, equity impact, adherence to ethical guidelines, and alignment with clinical outcomes. These audits should trigger review processes when performance deviations exceed predetermined thresholds, ensuring prompt response to emerging issues. The implementation of such monitoring systems requires clear protocols for data collection, analysis methodologies, and escalation pathways for addressing identified concerns.

4.3 Measuring the Impact of AI Governance on Service Quality

The ultimate test of any governance framework lies in its measurable impact on healthcare service quality. While previous reports discussed AI applications for operational efficiency, this section examines how governance structures specifically influence quality metrics in public hospitals. Establishing clear evaluation criteria for governance effectiveness is essential for continuous improvement and resource justification.

A primary impact measure is the effect of governance on equity outcomes. Effective governance should demonstrably reduce disparities in AI system performance across different patient populations. The UC Davis BE-FAIR framework provides a measurable approach to this challenge, demonstrating how systematic evaluation and adjustment of predictive models can address under prediction of risk for minority groups ^[16]. Public hospitals should track equity metrics such as algorithm performance consistency across demographic groups, accessibility of AI-enhanced services to vulnerable populations, and representation in training data used for algorithm development. Research shows that only part of hospitals conduct local bias evaluations, indicating significant opportunity for governance frameworks to improve equity outcomes through mandated assessment protocols ^[18].

Another critical impact dimension is patient safety enhancement through rigorous validation and monitoring. Governance frameworks should establish clear safety metrics, including rates of adverse events associated with AI recommendations, algorithm accuracy degradation over time, and concordance between AI suggestions and clinical judgment. The increase from 2023 to 2024 in hospitals evaluating most or all of their models for accuracy (49% in 2024, up from 42% in 2023) suggests growing recognition of this governance imperative ^[1]. Public hospitals should implement systematic reporting mechanisms for AI-related safety events and near misses, with clear analysis protocols to identify root causes and implement preventive measures.

The impact of governance on clinical workflow integration represents another important metric. Effective governance should facilitate appropriate integration of AI tools into clinical practice without creating undue burden or disruption. Measures should include clinician satisfaction with AI tools, time savings attributable to AI assistance, and reduction in administrative tasks. Governance frameworks that successfully balance oversight with usability contribute to more sustainable AI implementation and higher adoption rates among healthcare professionals. Additionally, governance impact should be assessed through resource utilization efficiency, examining whether AI systems governed under the framework deliver anticipated benefits without requiring disproportionate oversight resources themselves.

5 CONCLUSION

This study reveals that artificial intelligence holds transformative potential for enhancing service quality in public hospitals through applications spanning patient flow optimization, revenue cycle automation, supply chain management, clinical documentation, and predictive capacity planning. These technologies demonstrate substantial operational and financial benefits, including reduced wait times, decreased costs, improved revenue capture, and more efficient resource utilization. However, significant barriers impede widespread adoption, primarily stemming from technological infrastructure limitations, financial constraints, clinician resistance, and regulatory ambiguities.

The most critical finding is that successful AI integration depends not only on technological capability but on robust governance frameworks that address ethical, equity, and accountability concerns. Effective governance requires establishing multidisciplinary oversight, standardized evaluation protocols, and continuous monitoring to ensure AI systems enhance rather than undermine service quality and health equity. The digital divide between well-resourced and under-resourced hospitals further necessitates equitable governance approaches that promote access to AI benefits across diverse institutional settings. Implications for public hospitals include the urgent need to develop institutional AI strategies that prioritize governance infrastructure alongside technological investment. Next steps should focus on building AI literacy among staff, creating standardized procurement and evaluation processes, and advocating for clearer regulatory guidelines. Future success will depend on balancing innovation with rigorous oversight to ensure AI truly enhances service quality while maintaining equity, safety, and public trust in healthcare delivery.

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DECLARATION

The authors declare that Gen AI was used in the creation of this manuscript. The authors declare the use of different tools in writing and analyzing the data presented. GenAI tools were used for: grammar validation and text edition (DeepL), initial concepts and for applying chain-of-thought (Deepseek) prompting allowing exploratory to depth analysis (GPT-oss, Qwen3).

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