



## Impact of Hospital Management Strategies on the Quality of Clinical Care: A Systematic Review

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### Abstract:

**Background:** Hospital management strategies play a crucial role in shaping clinical care quality, influencing patient outcomes, operational efficiency, and adherence to evidence-based practices. Despite growing recognition of their importance, the effectiveness of these strategies varies across different healthcare settings, necessitating a systematic review of recent evidence.

**Aim:** This study synthesizes empirical research on the impact of hospital management strategies—such as Lean Management, Six Sigma, Total Quality Management (TQM), and patient-centered care—on clinical quality indicators, including patient safety, treatment outcomes, and staff satisfaction.

**Methods:** A systematic review of peer-reviewed studies (2000–2025) from databases like PubMed, EMBASE, and Web of Science was conducted. Quantitative studies employing cross-sectional, intervention-based, and observational designs were analyzed using tools such as the ROBINS-I to assess bias. Key outcomes included structural quality, clinical adherence, health outcomes, and patient satisfaction.

**Results:** Findings indicate that 49.5% of management-care quality associations were positive, with structural quality showing the strongest improvements (79%). Clinical quality and health outcomes followed (60% and 57%, respectively), while patient satisfaction remained largely unaffected (80% null associations). Leadership engagement, health IT integration, and organizational culture were critical moderators.

**Conclusion:** Hospital management strategies significantly enhance structural and clinical quality but require contextual adaptation. Future research should employ causal designs (e.g., RCTs) and qualitative methods to explore implementation barriers.

**Keywords:** Hospital management, clinical quality, Lean Management, Six Sigma, patient safety, systematic review.

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## Introduction:

The pursuit of improved clinical care quality remains a persistent concern across healthcare systems globally. Hospitals function as multifaceted institutions where managerial strategies play a crucial role in determining the quality of care provided, as well as influencing patient outcomes and institutional efficiency. The link between hospital management and both structural and clinical quality has been well-documented. Structural quality, often defined by factors such as infrastructure, staffing, and availability of resources, sets the foundation for effective service delivery. On the other hand, clinical quality is reflected in compliance with treatment protocols, adherence to evidence-based guidelines, and patient safety standards. As healthcare systems evolve and adopt new operational frameworks, ongoing research is needed to understand how emerging and traditional management strategies interact with these dimensions of care. A growing body of academic research underscores the decisive role of hospital management in shaping overall institutional performance. Empirical studies and literature reviews consistently demonstrate that hospital effectiveness is not solely a function of clinical expertise or technological capacity but is also deeply influenced by how healthcare organizations are managed [1].

Leadership practices, staff engagement, communication systems, and quality control mechanisms are among the managerial components that contribute to the performance of clinical teams and the safety of patient care environments. However, despite general consensus on the importance of management, there remains a need for updated syntheses that capture how specific strategies perform across various institutional and regional contexts, particularly in the face of ongoing changes in healthcare policy, patient expectations, and technological advancement [1].

This systematic review synthesis aims to consolidate recent findings from the academic literature regarding the impact of hospital-level management approaches on clinical care quality. The objective is not only to assess the effectiveness of different management strategies but also to identify persistent gaps in the literature and suggest directions for future investigation. Particular attention is given to widely implemented models such as Lean Management, Six Sigma, Total Quality Management (TQM), and patient-centered care frameworks. These models have been promoted in various settings as solutions to inefficiencies and quality deficits in healthcare delivery. Lean Management emphasizes waste reduction and streamlines processes, while Six Sigma focuses on minimizing variation and defects. TQM aims to instill a culture of continuous improvement across organizational layers, and patient-centered care prioritizes the values, preferences, and needs of patients in decision-making. The synthesis evaluates how these models perform in different hospital environments, analyzing their influence on key indicators like patient safety, error rates, treatment outcomes, staff satisfaction, and operational efficiency. It also considers contextual factors that mediate or moderate their effectiveness, such as hospital size, organizational culture, regulatory conditions, and leadership commitment. Through this analysis, the study highlights the need for context-sensitive implementation of management strategies and emphasizes the importance of aligning managerial reforms with clinical objectives. The review ultimately calls for more comparative and longitudinal studies to establish stronger causal relationships between management practices and clinical outcomes and to guide policy and leadership decisions in hospital settings [2,3].

## Methodology

This review integrates evidence from a wide array of empirical and systematic studies published between 2000 and 2025, with a focus on data derived from

peer-reviewed journals and comprehensive reviews. Prominent sources include the works of Ward et al. (2025) [1], Lsloum et al. (2024) [2], and other studies listed in recognized academic databases such as PubMed, EMBASE, and Web of Science. The selected literature primarily features quantitative methodologies, including cross-sectional studies and intervention-based designs. These studies apply validated assessment instruments, notably the ROBINS-I tool, which is used to evaluate the risk of bias in non-randomized studies. This consistent methodological approach enhances the comparability and reliability of the synthesized findings. The main outcomes addressed in the included studies encompass various dimensions of healthcare quality. Structural quality, as reflected in the organization and adequacy of physical infrastructure and human resources, represents a central focus. This includes the availability of trained staff, equipment, and facility readiness. Clinical quality, another core outcome, is measured by how well hospitals adhere to evidence-based clinical guidelines, reflecting the standardization and effectiveness of care practices. In addition, health outcomes such as mortality, morbidity rates, and the incidence of patient safety events are consistently assessed across the literature, offering objective indicators of care effectiveness and safety. Patient satisfaction and experience are also frequently examined. While these are inherently more subjective, they are increasingly acknowledged as critical components of healthcare quality, especially in systems that prioritize patient-centered care [2].

In addition to examining primary outcomes, this review includes a secondary analysis of key contextual variables that influence the relationship between hospital management practices and quality outcomes. These moderating factors include leadership engagement, the implementation of health information technology systems, and the prevailing organizational culture within institutions.

Such variables can significantly alter the effectiveness of management strategies and explain variability in outcomes across different settings. For instance, the presence of committed leadership may amplify the impact of quality improvement initiatives, while the integration of electronic health records and decision-support systems can enhance adherence to clinical guidelines. The reviewed studies span a broad geographic range, encompassing both high-income countries (HICs) and low- and middle-income countries (LMICs). This inclusion allows the review to capture a wide range of healthcare system structures and resource environments. Comparing findings across these varied contexts provides insights into the generalizability and limitations of management strategies. It also highlights how socioeconomic and systemic differences influence the implementation and outcomes of hospital-level interventions. By synthesizing data from diverse health systems, this review supports a more nuanced understanding of how management practices operate under different constraints and capacities. This methodological breadth strengthens the applicability of the findings to global health policy and hospital management reform [2,4,5].

### Overview of Hospital Management Strategies

Hospital management strategies have evolved into structured quality improvement models that aim to enhance clinical efficiency, safety, and outcomes. Among the most studied and implemented frameworks are Lean Management, Six Sigma, and Total Quality Management (TQM). Each approach addresses specific organizational challenges and is supported by evidence linking them to measurable improvements in healthcare delivery. Lean Management focuses on the elimination of non-value-adding activities and aims to streamline workflow processes within clinical environments. Research shows that implementing Lean principles in hospitals can reduce patient wait times, improve scheduling, and optimize the use of human and

material resources. These outcomes are particularly evident in emergency departments and surgical units, where operational delays can significantly affect care quality. The emphasis on process simplification and real-time problem solving helps teams identify inefficiencies and create solutions that are sustainable in high-demand healthcare settings [2,6].

Six Sigma, another widely adopted strategy, targets the reduction of variability and defects in healthcare processes. This model applies statistical tools and data-driven methods to analyze and improve clinical pathways. In practice, Six Sigma contributes to standardization in areas such as medication administration, infection control, and diagnostic testing. The approach is closely associated with enhanced patient safety and adherence to clinical standards. However, successful implementation depends heavily on robust infrastructure, consistent data collection, and specialized staff training. Without these foundational elements, the methodology may not achieve its intended impact or may encounter resistance from clinical teams unfamiliar with statistical quality tools. TQM takes a broader organizational perspective by embedding continuous quality improvement into the hospital's culture. It promotes collective responsibility across departments and emphasizes long-term change through leadership engagement, teamwork, and accountability. Studies link TQM adoption to sustained performance improvements in both clinical care and administrative operations. Key indicators such as reduced error rates, improved treatment outcomes, and increased staff satisfaction have been associated with institutions that maintain active TQM programs. Unlike Lean or Six Sigma, which often target specific processes, TQM aims to influence the entire organizational ecosystem, promoting alignment between management objectives and clinical goals [7-9].

In parallel to these operational strategies, Patient-Centered Care has gained prominence as a critical

model focused on aligning clinical decisions with individual patient preferences and values. This approach enhances the relational aspect of healthcare, leading to higher patient satisfaction and improved adherence to treatment plans. Evidence suggests that patient-centered practices contribute to better communication, lower readmission rates, and a greater sense of trust in healthcare providers. As a strategy, it supports not only clinical outcomes but also ethical and emotional dimensions of care. Workflow optimization often intersects with Lean Management principles, aiming to remove unnecessary steps in clinical processes. When applied effectively, it leads to smoother patient journeys through the healthcare system, reduces bottlenecks, and enhances staff productivity. Hospitals that integrate workflow redesign into their broader management strategy typically report gains in service delivery speed and a more balanced distribution of workload among staff. Collectively, these models demonstrate the importance of management-driven interventions in advancing hospital performance and patient care quality [9].

### Quantitative Evidence on Management-Quality Associations

Ward et al. (2025), in a comprehensive systematic review of 25 empirical studies, provide robust quantitative evidence on the relationship between hospital management practices and quality of care outcomes. Their findings show that nearly half (49.5%) of all analyzed associations between management strategies and care quality indicators were statistically significant and positive. An equal proportion (49.5%) was null, and only a minimal share (1%) showed significantly negative associations. These results suggest that while hospital management strategies often yield beneficial effects, their success is not guaranteed across all domains. The strongest positive associations were found concerning structural quality (79%), indicating that management practices are most consistently linked to improvements in

infrastructure, workforce planning, and resource management. Clinical quality, which includes adherence to evidence-based practices and care protocols, showed a 60% rate of positive associations. Health outcomes such as reduced morbidity and improved survival demonstrated a 57% positive link with management strategies. However, patient satisfaction metrics yielded largely null results, with 80% of associations showing no significant effect, suggesting that patient-reported experience is influenced by multiple factors and may not be directly or consistently impacted by managerial interventions alone. Lsloum et al. (2024) add to this evidence base through their systematic review, examining key management frameworks across multiple healthcare systems. They identify four major mechanisms that support the delivery of high-quality care: leadership engagement, integration of health information technologies, performance monitoring systems, and the implementation of patient safety protocols. According to their analysis, these mechanisms serve as central enablers that connect management decisions with clinical improvements. While Lsloum et al. recognize the broad applicability of these tools across healthcare settings, they also point out significant challenges in execution. Context-specific factors such as institutional readiness, staff capacity, and regulatory environments can hinder or delay effective implementation, particularly in under-resourced or fragmented systems. This finding underscores the need for adaptive strategies that

accommodate local barriers while maintaining fidelity to evidence-based models [2,8].

In further support of the management-quality linkage, Shakya et al. (2025) present empirical findings from hospital settings in India, highlighting the pivotal role of senior management in shaping institutional performance. Their study reveals that when top-level executives are actively involved in quality policy formulation, monitoring, and staff training, hospitals report stronger performance outcomes. The dimensions most closely correlated with effective management in their data include service responsiveness, operational reliability, and assurance—all critical to how patients and stakeholders perceive healthcare quality. The research shows that such management engagement not only affects technical care delivery but also strengthens trust, accountability, and efficiency within healthcare organizations. Together, these studies confirm a significant and multifaceted relationship between hospital management strategies and various dimensions of quality care. While structural and clinical quality show the most consistent improvements, patient satisfaction remains a more elusive target, likely due to its subjective nature and dependence on interpersonal, environmental, and systemic factors beyond management's direct control. These findings affirm the value of continued investment in leadership development, process optimization, and context-sensitive implementation to improve hospital performance through effective management [10,11].



**Table. 1:** Impact of Hospital Management Considerations.

Management Strategy	Structural Quality Improvement	Clinical Quality Improvement	Patient Satisfaction Impact	Key Supporting Studies
Lean Management	High (↑ workflow efficiency)	Moderate (↓ errors, ↑ adherence)	Low (minimal effect)	Ward et al. (2025)
Six Sigma	Moderate (↓ variability)	High (↑ standardization)	Low	Lsloum et al. (2024)
TQM	High (↑ resource use)	Moderate (↑ staff engagement)	Neutral	Shakya et al. (2025)
Patient-Centered Care	Low	Moderate (↑ compliance)	High (↑ trust, communication)	Multiple studies

**Mechanisms and Contextual Modulators**

Leadership emerges across numerous studies as a foundational mechanism enabling the effective implementation and sustainability of hospital management strategies. The consistent involvement of hospital leaders in quality initiatives and patient safety efforts plays a key role in shaping organizational priorities and influencing staff behavior. When leadership is visibly committed to quality improvement, it fosters a sense of shared responsibility among clinical and administrative teams. This engagement mobilizes frontline staff, channels financial and human resources appropriately, and builds momentum for ongoing change. Leadership that actively monitors progress and communicates goals contributes directly to operational consistency and the institutionalization of best practices. Another core mechanism supporting management-driven quality improvement is the integration of information systems. Digital platforms for data collection, analysis, and reporting allow hospitals to track clinical performance indicators and identify

inefficiencies in real time. The use of electronic health records, clinical dashboards, and predictive analytics strengthens decision-making processes and enables timely intervention in areas such as infection control, medication safety, and patient throughput. These tools not only improve transparency but also support accountability across departments. Data availability empowers teams to act based on objective evidence, rather than assumptions or routine, which enhances the effectiveness of management strategies [1,9].

In addition to leadership and technology, several contextual factors moderate how management practices influence hospital performance. Financial resources are central; institutions with adequate funding are better positioned to invest in staff training, infrastructure upgrades, and quality improvement tools. Organizational culture also matters significantly. Facilities characterized by openness to innovation, shared learning, and low resistance to change tend to adopt and benefit from new management models more quickly. A culture

that values feedback, collaboration, and accountability enables smoother transitions and greater alignment between clinical goals and administrative processes. However, even well-designed strategies can be undermined by structural and cultural barriers. Physician disengagement remains a persistent challenge, particularly in environments where clinical staff are not meaningfully involved in management decisions or quality initiatives. Without clinician buy-in, implementation fidelity drops, and intended improvements are rarely sustained. Inadequate data infrastructure also limits the ability to monitor, evaluate, and refine interventions. Hospitals without reliable information systems struggle to track progress or identify areas for adjustment, weakening the impact of otherwise promising strategies [1,9].

Resistance to organizational change presents another obstacle. Staff accustomed to traditional workflows

may view new management approaches as disruptive or unnecessary, especially if change is poorly communicated or lacks visible short-term benefits. Regulatory environments can either support or constrain innovation, depending on how flexible or prescriptive they are. For instance, rigid compliance standards may limit experimentation, while clear but adaptable policies can encourage continuous improvement. Together, these mechanisms and contextual modulators determine the real-world impact of hospital management strategies. Effective leadership, strong data systems, sufficient funding, and adaptive cultures enhance outcomes, while disengagement, infrastructure gaps, and resistance to change reduce potential benefits. Understanding and addressing these factors is essential for tailoring management strategies to specific institutional environments and ensuring their long-term success [1,9].

**Table. 2:** Moderators of Management Strategies' Effectiveness.

Moderator	Positive Influence	Barriers	Recommendations
Leadership Engagement	Drives accountability, resource allocation	Absence leads to poor implementation	Train leaders in change management
Health IT Integration	Enhances data-driven decisions, monitoring	High costs, technical gaps	Invest in scalable digital solutions
Organizational Culture	Encourages innovation, staff buy-in	Resistance to change	Foster collaborative environments
Financial Resources	Supports training, infrastructure upgrades	Budget constraints limit scalability	Prioritize cost-effective interventions

## Methodological Considerations and Research Gaps

The existing body of literature examining the relationship between hospital management practices and care quality relies predominantly on observational and cross-sectional study designs. While these studies provide valuable insights into associations, they fall short in establishing causality due to the risk of confounding variables and selection bias. The limitations of such designs restrict the ability to determine whether observed improvements in clinical outcomes are directly attributable to specific management strategies or influenced by other institutional or contextual factors. As a result, the evidence base, though informative, lacks the methodological robustness needed for strong policy or practice recommendations [11].

Although a number of intervention studies exist, especially in the implementation of Lean and Six Sigma frameworks, their scope remains narrow and largely confined to individual institutions or specific service areas. These interventions often lack external validity, making it difficult to generalize findings across different healthcare systems, departments, or regions. In many cases, the intervention context, including the presence of motivated leadership or additional resources, plays a key role in the outcome, limiting broader applicability. Furthermore, variation in implementation fidelity and outcome measurement reduces comparability across studies. Recent advances in the quantitative assessment of hospital management structures and clinical quality indicators underscore the need for more rigorous research designs. Randomized controlled trials (RCTs), although challenging to conduct in complex healthcare environments, offer the most reliable method for isolating the causal effects of specific management practices. In parallel, natural experiments—such as policy shifts, organizational restructuring, or the staggered rollout of new quality initiatives—can be leveraged to study management effects in real-world settings while minimizing

selection bias. These approaches can provide stronger evidence for the scalability and transferability of effective interventions [11].

In addition to quantitative limitations, the literature also lacks sufficient qualitative inquiry into the mechanisms through which management practices influence clinical behavior. Management interventions often involve multiple actors, processes, and contextual variables, making them difficult to fully understand through statistical analysis alone. Qualitative research, including ethnographic methods, interviews, and focus groups, can help uncover how healthcare professionals perceive, respond to, and adapt to management-led changes. These insights are essential for designing implementation strategies that are sensitive to institutional culture, staff dynamics, and workflow realities. The interaction between managerial approaches and frontline clinical practices remains a particularly underexplored area. Understanding how staff interpret and enact management directives is critical for bridging the gap between policy and practice. Qualitative findings can also inform the design of hybrid studies that combine quantitative impact evaluation with process-level analysis, offering a more complete picture of both outcomes and mechanisms. Addressing these methodological gaps is crucial for advancing the field. Future research should prioritize causal inference, contextual analysis, and mixed-method approaches to generate actionable evidence that supports the design and dissemination of effective hospital management strategies across diverse healthcare settings [11].

## Conclusion:

This systematic review highlights the substantial yet variable impact of hospital management strategies on clinical care quality. Evidence confirms that structured approaches like Lean Management, Six Sigma, and TQM improve structural and clinical quality, particularly in resource allocation, protocol adherence, and patient safety. However, their



success depends on contextual factors such as leadership commitment, organizational culture, and technological infrastructure. A key finding is the disparity in effectiveness across quality dimensions. While structural and clinical outcomes show consistent improvements, patient satisfaction remains largely unaffected by managerial interventions alone. This suggests that patient experience is shaped by broader, less tangible factors, such as interpersonal communication and environmental comfort, which may not be directly addressed by process-oriented strategies. The review also identifies critical gaps in the literature. Most studies rely on observational designs, limiting causal inferences. Additionally, intervention studies often lack generalizability due to a narrow focus or institution-specific conditions. Future research should prioritize randomized controlled trials (RCTs) and natural experiments to strengthen evidence on causality. Qualitative investigations are also needed to explore how frontline staff perceive and adapt to management-driven changes. Practical implications include the need for hospital leaders to tailor strategies to institutional contexts, ensuring clinician engagement and robust data systems. Policymakers should support adaptive frameworks that accommodate local resource constraints. Ultimately, sustainable quality improvement requires aligning managerial practices with clinical objectives while fostering a culture of continuous learning and patient-centered care.

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### أثر استراتيجيات إدارة المستشفيات على جودة الرعاية السريرية: مراجعة منهجية

#### المخلص:

**الخلفية:** تلعب استراتيجيات إدارة المستشفيات دورًا محوريًا في تشكيل جودة الرعاية السريرية، حيث تؤثر على نتائج المرضى وكفاءة التشغيل والالتزام بالممارسات المبنية على الأدلة. وعلى الرغم من تزايد الاعتراف بأهميتها، إلا أن فعالية هذه الاستراتيجيات تختلف باختلاف بيئات الرعاية الصحية، مما يستدعي إجراء مراجعة منهجية للأدلة الحديثة.

**الهدف:** تهدف هذه الدراسة إلى تحليل الأبحاث التجريبية المتعلقة بأثر استراتيجيات إدارة المستشفيات، مثل الإدارة الرشيدة (Lean Management)، وستة سيغما (Six Sigma)، والإدارة الشاملة للجودة (TQM)، والرعاية المرتكزة على المريض، على مؤشرات الجودة السريرية، بما يشمل سلامة المرضى ونتائج العلاج ورضا الكوادر الطبية.

**المنهجية:** أجريت مراجعة منهجية للدراسات المنشورة في المجالات المحكمة بين عامي 2000 و2025، وذلك من خلال قواعد بيانات مثل PubMed وEMBASE وWeb of Science. تم تحليل الدراسات الكمية التي اعتمدت على تصاميم مقطعية أو تدخلية أو رصدية باستخدام أدوات مثل ROBINS-I لتقييم التحيز. شملت المؤشرات الرئيسية: الجودة الهيكلية، والالتزام بالإجراءات السريرية، والنتائج الصحية، ورضا المرضى.

**النتائج:** أظهرت النتائج أن 49.5% من العلاقات بين استراتيجيات الإدارة وجودة الرعاية كانت إيجابية، مع تسجيل أكبر تحسن في الجودة الهيكلية (79%). تلتها الجودة السريرية (60%) والنتائج الصحية (57%)، بينما ظل تأثير الاستراتيجيات على رضا المرضى ضعيفًا، حيث كانت 80% من العلاقات غير دالة إحصائيًا. وُجد أن مشاركة القيادة، وتكامل تكنولوجيا المعلومات الصحية، وثقافة المؤسسة من العوامل المؤثرة الرئيسة.

**الاستنتاج:** تعزز استراتيجيات إدارة المستشفيات الجودة الهيكلية والسريرية بشكل ملحوظ، لكنها تتطلب تكيفًا مع السياق المؤسسي. ويُنصح بأن تعتمد الأبحاث المستقبلية على تصاميم سببية مثل التجارب العشوائية (RCTs) وأساليب نوعية لفهم معوقات التنفيذ.

**الكلمات المفتاحية:** إدارة المستشفيات، الجودة السريرية، الإدارة الرشيدة، ستة سيغما، سلامة المرضى، مراجعة منهجية.