

LEAN MANAGEMENT ON HOSPITAL FINANCIAL PERFORMANCE: A LITERATURE REVIEW

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ABSTRACT

This literature review explores the financial impact of lean management adoption in hospitals. Hospital financial performance is typically evaluated by analyzing key performance indicators (KPIs) like profitability, liquidity, activity, and efficiency ratios. Lean management is a strategy and philosophy for organizing work that focuses on maximizing customer value by eliminating waste (non-value-adding activities), increasing added value and continuously improving all processes. The review systematically analyzed peer-reviewed studies from databases including PubMed and Google Scholar, published between 2000 and 2025. The findings indicate that Lean Management leads to significant cost savings through enhancing operational efficiency. Lean management also focusing on waste reduction, streamlining workflows, and improving resource utilization. The review also highlights the importance to fully realize the benefits of lean management, healthcare providers should adopt a holistic approach that balances operational efficiency with patient care quality. The study concludes that lean management are a worthwhile strategic for hospitals aiming to improve financial health and operational efficiency.

Key words: lean management; hospital financial performance; cost reduction

INTRODUCTION

Health systems in many developed and developing countries face issues like waste, inefficiency, high costs, and poor quality of care. Health managers are trying to solve these problems and have begun using a new engineering method called "lean management" to improve how things are done. Lean management is a type of management system that helps organize how operations are designed. This system brings important improvements in the quality of care, patient safety, how well work is done, and the costs in the healthcare industry. Lean Management, which comes from production management, is now being used in other areas too, like medicine. When it's applied in medical settings, it's often called Lean Hospitals in the literature (Chmielarz, et al., 2023). Hospitals that use lean methods look at how their different departments and teams are set up. They start by understanding that one effective way to improve patient care is by reducing cost and making healthcare services more efficient.

Many studies have found that several things play a big role in how management adopt lean management. In a healthcare environment, these things can be grouped into factors that affect individuals, the whole organization, and specific departments (Ayaad et al., 2022). Organizational factors include the organization's main goal, the way it works together as a team, how it rewards people, how it sets up its structure, how it trains staff, and how it shares information through reports. Departmental factors include having good suppliers that are easy to reach, working well in a team, managing time effectively, getting support from managers, organizing work well, having proper authority and feeling empowered, getting support from managers, and receiving training. Individual factors involve using good and organized work habits and having the right level of knowledge.

Despite the growing interest in lean management in hospital, there's still a big gap in research about what exact steps work best when putting it into practice. A lot of studies look at lean ideas in other sector but it limited in how lean tools can be adjusted for the special problems in hospital. The need for this research is becoming more important because healthcare providers are facing bigger financial challenges, especially after the COVID-19 pandemic. Healthcare systems are very busy and overloaded, so there is a big need for ways to save money without lowering the quality of care patients receive. Lean management could be a good solution, but it isn't widely used because there isn't enough evidence about how to do it best and what results it can bring in healthcare settings. The novelty of this research lies in its holistic approach to analyzing lean management in hospital, especially in cost reduction. The results will give healthcare managers useful information about lean management and how it affects cost control in hospital. This information will help managers use lean management effectively and change their organizations to improve service quality, but can manage cost better. This will lead to better patient outcomes and higher satisfaction.

Literature review

Lean Hospital

Lean Hospitals is a toolkit, a management system, and a way of thinking that helps hospitals improve the care they provide. It helps reduce mistakes and the time patients have to wait for medical services. A lean system is an idea that supports doctors and other healthcare workers by removing unnecessary problems so they can focus on

what really helps patients. It also helps different parts of a hospital work together better, which makes things more efficient and improves patient care.

In manufacturing, 'Inventory' waste refers to having too much of finished products, raw materials, supplies, parts, and items that are being worked on but not yet complete (Malik, 2016). However, for a core service like healthcare, the idea of inventory waste is shown through the number of flow units in the process. These flow units can include stock items, medical supplies, and the list of patients waiting for treatment. This point of view also allows the 'waiting' waste to cogitate the 'health services timeliness' which has been pointed out as an aspect in healthcare quality enhance.

In healthcare inventory waste, a big part comes from having too much extra supplies or inventory, which adds a lot to healthcare costs. Usually, these inventories are kept as a backup to help things run smoothly between different parts of the organization. Healthcare materials management makes sure there are enough supplies available because the consequences of running out can be serious. One way to improve this able to be using Just in Time (JIT) deliveries, which means more frequent shipments and smaller. Patients waiting to get medical services are considered the second biggest inventory waste because they might have to wait several weeks just to get an appointment.

The lean approach becomes a key tool in the hospital setting, especially for the supply chain, which looks to keep its operations sustainable by managing things efficiently. This focus on streamlining processes and making them more standard helps the hospital reduce waste and cutting costs, while also improving the quality of services, which in turn leads to higher customer satisfaction. Sulistiarini (2024) suggests that lean management presents a promising way to reduce costs and improve quality, but its effectiveness relies on the organization's commitment and the support from leadership. There is potential for lean management to change healthcare services, resulting in better cost control and higher quality care. Therefore, this study is interested in testing the relationship between lean management and cost reduction.

Cost Reduction

In hospital sector, the main reason for not solving supply problems is usually because there isn't enough budget (Machado, et al., 2014). But actually, the real issue comes from how the budget is managed and used. There's also a big problem with wasting and misusing supplies and equipment. Workers in the supply field aren't always well-trained, and there's not enough focus on planning the movement of goods and services in hospital. Healthcare processes are complicated and built on a supply chain that involves many steps to create the services and products they offer. Each process needs a specific mix of products and services, and this mix can be different between organizations or even among different patients and staff within the same organization. Not only are the products in healthcare complex and require skilled workers, but the resources used to create these services are also getting more advanced and more expensive.

Lean focuses mainly on reducing waste, which means anything that isn't needed in making a product or offering a service. So, by understanding and finding waste in the hospital process, we can make sure that only useful activities are done, and that patients get exactly what they need. The proposed model in lean hospital helps to figure out what matters most to patients by changing the way the organization works, with teamwork among doctors and nurses being key. By reducing cost, adding more value through better activities and helps hospitals provide better service quality (Rooslanda & Ayuningtyas, 2023).

Evans et al. (2023) showed the cost of healthcare is too high and not sustainable. A major reason for this is the care and clinical activities' large amount and processes that don't really improve patient outcomes or their overall experience. Financial measurement methods are very interesting to study. Moreover, explaining hospital expenditures requires understanding the aspects that can impact the company's finances and how costs can be minimized. Wang et al. (2025) discovered that most of the hospitals applying lean practices are large public hospitals, especially in critical areas like emergency services, surgical departments, and pharmacies. These sectors, characterized by a large number of patients and intricate procedures, gain the most advantages from lean methods to optimize operations and reduce costs.

METHOD

The literature review was conducted through a systematic search of academic databases to identify relevant studies on the financial impact of Lean Management in hospitals. The databases searched included PubMed and Google Scholar. The study covered only from January 2020 to September 2025. The search terms used were "Lean Management," "hospital financial performance," "cost reduction," "lean," "lean hospital,". Boolean operators (AND, OR) were employed to refine the search results and ensure comprehensive coverage of the topic.

RESULTS AND DISCUSSION

The following table presents data from a selection of 5 articles found through a literature review conducted for the article titled Lean Management on Hospital Financial Performance. These articles were carefully selected based on their relevance to the application of lean management principles in healthcare services, specifically focusing on cost reduction.

Table 1. Data of Five Selection Article Titled “Lean Management on Hospital Financial Performance”

No.	Author(s)	Year	Title	Journal	Main Focus	Key Findings
1.	Munaa, Ardini, and Inayah	2021	Lean Hospital: Strategy of Operational Financing Efficiency in Supply Chain Management	Indonesia Health Management	Lean management can decrease waste such as inventory, motion and waiting time	Cost efficiency, lean healthcare, logistics management, and supply chain management
2.	Marsilio et al.	2022	Lean adoption, implementation, and outcomes in public hospitals: benchmarking the US dan Italy health systems	BMC Health Services Research	The framework points out 4 main areas (employed an affiliated staff, patients, service, and cost provision) of performance outcomes.	Lean Healthcare, Public hospitals, Performance Improvement, Outcomes, Benchmarking
3.	Evans, Leggat, and Samson	2023	A systematic review of the evidence of how hospitals capture financial benefits of process improvement and the impact on hospital financial performance	BMC Health Services Research	Process improvement and financial benefits measurement in healthcare	Waste, healthcare, Value-based Process improvement, Hospitals, lean, Financial outcomes
4.	Sulistiarini	2024	Optimizing Healthcare Services through Lean Management: A Pathway to Cost Reduction and Quality Improvement	Research Gate	The effectiveness of lean tools	Lean Management, Healthcare Optimization, Cost Reduction, Quality Improvement, Lean Six Sigma
5.	Wang et al.	2025	A Systematic Review of Lean Implementation in Hospitals: Impact on Efficiency, Quality, Cost, and Satisfaction	International Journal of Health Policy and Management	Influence of Lean Implementation on 4 key themes: quality, cost, Efficiency, and satisfaction	Lean Healthcare, Lean Management, Lean Implementation, Hospitals

The first literature examined lean management contribute on supply chain management. The supply chain management (SCM) process begins with receipt of invoices, invoice processing, storage of goods, unit requests, distribution, stock recording and procurement to purchasing. The lean principles implementation is held with the tends of decreasing waste that arises in each process. Ultimately, the benefits extend beyond reduced waste to cost efficiencies. This optimizes the hospital's role as a healthcare provider for patients (Munaa, Ardini, & Inayah, 2021).

The theoretical framework employed to categorize the surveys’s items that has been evolved to recognize the indicators that able to be employed to estimate the adoption’s maturity and the operational and strategic application approach, thus pointing out an organized frame to determine the Lean dispersion in a healthcare system. Also, the framework determines 4 main areas (affiliated and employed staff, patients, cost and service provision) of performances outcomes to equate the leanness between different healthcare systems, Lean literature

contemplates leadership commitment to be an important countervailing force for Lean implementation sustainability over time and success (Marsilio, Pisarra, Rubio, & Shortell, 2022).

Lean implementation research generally has shown a positive relationship with revenue enhances as the primary positive financial effect of process improvement. These researchs have all been in the U.S., where developed throughput and efficiency is likely to be connected with 'doing more work' which in turn creates more income. Evidence has been rising that the cost of healthcare is unsustainable and too expensive. One of the roots is the care and clinical activities' volume and processes that do not add value to experience or outcomes (Evans, Leggat, & Samson, 2023).

The findings from this literature review underscore the potential for lean management to transform healthcare services, leading to better cost control and quality improvements. However, the success of lean initiatives depends on leadership support, staff engagement, and a context-specific approach that considers the complexities of healthcare delivery. As the global healthcare system continues to evolve, lean management offers a pathway to not only improve efficiency but also enhance patient care (Sulistiari, 2024).

Most hospitals acquiring lean are large public hospitals, especially in high-influence departments such as operating rooms, pharmacies, and emergency rooms. These departments, with complex processes and high patient volumes, advantage most from Lean to streamline operations and minimize costs. Key efficiency improvements involve shorter LOS, better patient flow, and reduces waiting times, all support to improved resource utilizations. Lean drive significant quality enhances, such as improved medication management, increased patient safety, and lower 30-day readmission rates. In the end, lean management outcomes in cost depletions by increasing operational efficiency and treatment outcomes, which is critical in the latter-day global healthcare landscape concentrated on cost containment. By reducing waste and optimizing process, Lean fosters both enhanced hospital long-term financial sustainability and performance (Wang, et al., 2025).

CONCLUSION

The findings from this literature review show lean management is a worthwhile strategic for hospitals aiming to improve financial health and operational efficiency. The financial measurement method is various in cost terms. Lean management able to improve operational efficiency and minimize cost by eliminating waste, optimizing processes, and ensuring the optimization of resources allocation. To fully realize the benefits of lean management in healthcare, healthcare providers should adopt a holistic approach.

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