

Implementation of 5S System in Hospitals: “5S as a Lean Strategy for Strengthening Quality and Efficiency in Sri Lankan Public Hospitals”

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Article Abstract:

Background: The 5S system is a Japanese-origin workplace organization methodology increasingly applied in healthcare settings to improve quality, safety, and efficiency. In Sri Lanka, public hospitals operate under significant resource constraints, overcrowding, and workflow inefficiencies, making low-cost quality improvement strategies such as 5S particularly relevant. Over the past two decades, the Sri Lankan health sector has gradually introduced 5S as a foundational component of broader quality management initiatives.

Objective: This article examines the implementation of the 5S system in Sri Lankan hospitals, its public health implications, gaps in existing knowledge, and the applicability of global and local evidence to the Sri Lankan healthcare context.

Methods: A narrative review approach was used, drawing on published literature, government reports, and international case studies related to 5S and Lean healthcare, with specific emphasis on Sri Lankan public hospitals.

Results: Evidence indicates that 5S implementation in Sri Lankan hospitals has contributed to improved workplace organization, reduced patient waiting times, enhanced staff morale, and better utilization of limited resources. Early adoption in institutions such as the Castle Street Hospital for Women demonstrated the feasibility of 5S in public-sector healthcare. Integration of 5S within the 5S–Kaizen–TQM framework has further strengthened continuous quality improvement efforts. However, empirical evidence remains limited, with few rigorous evaluations assessing long-term sustainability, cost-effectiveness, or patient safety outcomes.

Conclusion: The 5S system represents a practical, low-cost strategy for improving healthcare service delivery in Sri Lanka. While existing experiences suggest positive operational and public health benefits, further research and standardized evaluation frameworks are required to support large-scale institutionalization and sustainability within the national health system.

Full Text

Background:

Healthcare systems globally are under increasing pressure to deliver high-quality, safe, and efficient care in the face of rising patient expectations, workforce shortages, and constrained resources. These challenges are particularly evident in publicly funded health systems in low- and middle-income countries, where overcrowding, workflow inefficiencies, and suboptimal use of resources are common. Sri Lanka’s public healthcare system, while internationally recognized for its achievements in maternal and child health and universal access, is not immune to such operational challenges (1).

Within this context, quality improvement methodologies that are low-cost, adaptable, and sustainable are of significant importance. One such methodology is the **5S system**, a workplace organization and management approach originating from Japan. The term 5S represents five Japanese words: *Seiri* (Sort), *Seiton* (Set in order), *Seiso* (Shine), *Seiketsu* (Standardize), and *Shitsuke* (Sustain).

Together, these principles provide a structured framework for organizing workspaces, reducing waste, improving efficiency, and fostering a culture of discipline and continuous improvement (2).

Initially developed within the manufacturing sector, particularly the Toyota Production System, 5S has since been adapted for use in healthcare settings worldwide. In hospitals, 5S is applied to clinical and non-clinical areas including wards, outpatient departments, operating theatres, pharmacies, laboratories, and administrative units. The methodology emphasizes visual management, standardization of processes, and staff engagement, making it particularly suitable for complex healthcare environments (3).

Sri Lanka was among the early adopters of 5S in the healthcare sector in South Asia. The introduction of 5S into Sri Lankan hospitals began in the late 1990s and early 2000s, with the Castle Street Hospital for Women frequently cited as a pioneering institution. Subsequently, the Ministry of Health promoted 5S as a foundational step towards broader quality management frameworks such as Kaizen and Total Quality Management (TQM), often with technical support from Japanese agencies and international organizations (4,5).

Explanation of 5S System Implementation in Sri Lankan Hospitals

Conceptual Framework of 5S in healthcare

The 5S system functions as both a technical and cultural intervention. Each component contributes to incremental improvement:

- **Sort (Seiri):** Identification and removal of unnecessary items from the workplace.
- **Set in Order (Seiton):** Logical arrangement and labeling of essential items to ensure ease of access.
- **Shine (Seiso):** Routine cleaning and inspection to maintain hygiene and identify defects.
- **Standardize (Seiketsu):** Development of standard operating procedures and visual controls.
- **Sustain (Shitsuke):** Cultivation of discipline through regular audits, leadership support, and staff engagement.

In healthcare settings, these steps directly influence patient safety, infection prevention, workflow efficiency, and staff productivity. Unlike technology-intensive interventions, 5S relies primarily on human behavior, leadership commitment, and organizational culture (6).

Historical Development in Sri Lanka

The formal application of 5S in Sri Lankan hospitals began as pilot initiatives led by motivated hospital administrators and clinicians. Castle Street Hospital for Women is widely regarded as the first public hospital to implement 5S comprehensively, demonstrating improvements in cleanliness, organization, and staff motivation. This success provided a model for replication in other institutions (4).

Recognizing its potential, the Ministry of Health incorporated 5S into national quality improvement strategies. The approach was subsequently linked with Kaizen (continuous improvement) and TQM, creating a phased pathway for institutional development. Training programs conducted by the Sri Lanka Standards Institution and support from the Japan International Cooperation Agency further facilitated capacity building across hospitals (5,7).

Current Status of Implementation

At present, 5S is implemented to varying degrees across many tertiary, secondary, and selected primary healthcare institutions in Sri Lanka. Implementation typically begins with non-clinical areas and gradually extends to clinical units. Quality circles and hospital quality management units often oversee 5S activities, supported by hospital leadership.

Studies conducted in selected districts indicate that 5S is one of the most commonly adopted Lean tools in Sri Lankan public hospitals. Reported benefits include improved organization of workspaces, better inventory control, reduced time wastage, and improved patient flow, particularly in outpatient departments (8).

However, the depth and sustainability of implementation vary significantly between institutions, often influenced by leadership continuity, staff turnover, and competing service demands.

Public Health Implications:

Improvement of Patient Safety and Quality of Care

Disorganized clinical environments increase the risk of medical errors, delays in care, and healthcare-associated infections. By improving orderliness, cleanliness, and standardization, 5S directly contributes to safer care environments. Clear labeling of equipment, standardized storage of medications, and uncluttered workspaces reduce the likelihood of errors and improve response times during emergencies (6,9).

Enhanced Access and Efficiency

Public hospitals in Sri Lanka frequently experience high patient volumes, particularly in outpatient departments. Evidence suggests that Lean interventions incorporating 5S are associated with reductions in patient waiting times and smoother patient flow. Improved efficiency not only enhances patient satisfaction but also allows better utilization of limited human and physical resources (8).

Health Workforce Motivation

Healthcare worker morale is a critical determinant of service quality. Cluttered and inefficient workplaces contribute to stress and dissatisfaction. Implementation of 5S has been associated with improved staff morale, sense of ownership, and professional pride. These factors are particularly important in retaining healthcare workers in the public sector (10).

Cost Containment and Resource Optimization

While direct cost-effectiveness studies are limited, international and local experience suggests that 5S reduces wastage of supplies, prevents unnecessary procurement, and minimizes time lost searching for equipment or documents. In a publicly funded system such as Sri Lanka's, these efficiency gains have significant public health value (6).

Gaps in the Existing Knowledge:

Despite widespread adoption, several important gaps remain in the evidence base regarding 5S implementation in Sri Lankan hospitals.

First, there is a **lack of rigorous outcome evaluations**. Most available evidence consists of descriptive reports, small surveys, or anecdotal accounts. There are few controlled studies assessing the impact of 5S on clinical outcomes, patient safety indicators, or cost savings.

Second, **sustainability remains inadequately studied**. Many hospitals demonstrate initial improvements following 5S implementation, but maintaining standards over time is challenging. Factors influencing sustainability—such as leadership turnover, organizational culture, and incentive structures—require systematic investigation (11).

Third, **standardized measurement tools are lacking**. Without agreed-upon indicators and audit tools, comparing performance across hospitals and regions is difficult. This limits learning and scaling of best practices.

Finally, **integration with digital health systems** has not been sufficiently explored. As Sri Lanka increasingly adopts electronic health records and digital supply chain systems, understanding how 5S principles align with digital workflows is essential.

Applicability of the Evidence to Sri Lanka:

The global literature on 5S and Lean healthcare provides a strong rationale for continued application in Sri Lanka. Several factors enhance its applicability.

Sri Lanka's public health system shares many characteristics with other low- and middle-income countries where 5S has been successfully implemented, including resource constraints and high service demand. The low-cost, behavior-focused nature of 5S makes it particularly suitable for such settings (6,11).

Policy alignment further supports applicability. The Ministry of Health has consistently emphasized quality improvement, efficiency, and patient safety in national health strategies. The integration of 5S into existing quality management structures enhances feasibility and acceptability (1,5).

Moreover, Sri Lanka possesses a trained health workforce and established training institutions capable of supporting ongoing capacity building. This institutional readiness strengthens the case for sustained implementation and scaling up of 5S across all levels of care.

Recommendations:

1. **National Standardization:**
Develop and disseminate national guidelines for 5S implementation in healthcare, including standardized audit tools and performance indicators.
2. **Strengthening Leadership Capacity:**
Incorporate quality improvement and Lean management principles into leadership training programs for medical administrators and clinical leaders.
3. **Rigorous Research and Evaluation:**
Promote operational research to assess the impact of 5S on patient safety, efficiency, and costs using robust study designs.
4. **Integration with Digital Health Initiatives:**
Align 5S principles with ongoing digital transformation efforts to enhance workflow efficiency and data-driven decision-making.
5. **Sustained Training and Monitoring:**
Ensure continuous training, regular audits, and feedback mechanisms to maintain gains and foster a culture of continuous improvement.

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