Journal of Social Research
P-ISSN: 2827-9832
E-ISSN: 2828-335x
http://ijsr.internationaljournallabs.com/index.php/ijsr

IMPLEMENTATION OF LEAN MANAGEMENT FOR HOSPITAL SERVICE QUALITY IMPROVEMENT: LITERATURE REVIEW

Elfrida Rooslanda[1]*, Dumilah Ayuningtyas[2]
[1 2] *Faculty of Public Health*, Universitas *Indonesia, Jakarta, Indonesia*
elfridarooslanda@gmail.com, dumilah@gmail.com

ABSTRACT

Hospitals as labour-intensive and capital-intensive organizations, as well as providing medical and non-medical services require management to increase the efficiency and effectiveness of resources. However, this management must still pay attention to the quality of health services according to service standards and provide benefits for patients. Through Lean Management, continuous improvement can be made by eliminating waste, increasing added value, especially for patients. This is so that the hospital can be the choice of patients to entrust their health. This research is to determine efforts to improve the quality of hospital services using the lean management method. In collecting and synthesizing previous information, this study uses a systematic library research search approach using the PRISMA method. Searches were performed on the Google Scholar and PubMed databases. Articles are limited from 2018-2023, in hospital services and using the Lean Management method. Based on the search results found 1202 articles with 8 copies. From the results of the screening of articles over the last 5 years, 48 research titles and abstracts were obtained, then a screening was carried out on the completeness of the selected articles and studies that carried out the process of improving service quality from the results of the Lean Management approach. Efforts to improve quality using the Lean Management method are focused on increasing Value Added activities by reducing Non Value Added activities. Lean Management is considered effective in efforts to improve quality by maximizing existing resources. Through a number of studies obtained, hospitals that implement Lean Management benefit by identifying sources of waste. So that it can be input for the Hospital to focus on efforts to improve these units by reducing waste and increasing VAR (Value Added Ratio), so as to create quality services that meet patient expectations.

Keywords: Lean, Hospital, Service Quality

INTRODUCTION

Currently, the challenges in the healthcare business are increasingly numerous and diverse, with the increasing number of new health facilities and the addition of branches from pre-existing hospitals. This has led to more and more choices of hospitals that will be places where people entrust their health, especially in urban areas. Today's consumers or customers are more educated or more knowledgeable, with many means to verify or seek superior service alternatives and tend to maximize value within the highest limits of cost, knowledge, mobility, and benefits. (Kotler & Keller, 2012) Such conditions require hospitals to be able to compete by improving the quality of health services to be able to provide satisfaction to patients.

Hospitals that want to stay afloat and competitive will care about the value of their customers. (Yulianingsih et al., 2022) Patients as customers in the hospital will feel satisfaction if the expectations of the services they receive are met. Waiting times and queues related to administration, patient health assessment, diagnosis, pharmacy, surgery, referral, and patient transfer, are sources of patient dissatisfaction with health services and are negatively associated with patient satisfaction. In some regional hospitals in South Africa, long wait times are due to

overworked and frustrated staff, as well as poor quality of service due to increased workloads (Naidoo & Mahomed, 2016).

Hospitals as labor-intensive and capital-intensive organizations, as well as providing medical and non-medical services twenty-four hours a day need special attention in managing health care organizations to increase the efficiency and effectiveness of managing financial resources, technology, and manpower. (Ayuningtyas, 2020) This must be done while still prioritizing the quality of health services. The quality of health services is the level of health services provided according to service standards by following the development of science to be able to improve optimal health. So that in an effort to maintain the quality of health facility services, measurements and evaluations must be carried out using quality indicators(Rosady et al., 2022).

Efforts to improve the quality of health services can use Lean management which is an approach from the manufacturing industry (Toyota Production System). Lean management has been shown to benefit improved patient safety, quality, and cost, while preventing delays and increasing employee satisfaction by permanently fixing problems rather than simply addressing or hiding them. (Graban, 2016) Lean management as a form of continuous improvement efforts will focus on eliminating waste, increasing added value, and providing value to customers (Amalia & Ramadhan, 2021).

Quality improvement should ideally lead to lower costs, and increased productivity should lead to better quality for healthcare users. Lean management has been done by many hospitals in an effort to make improvements or improve quality, and through this study the author wants to know how the application of Lean management in supporting efforts to improve service quality.

METHOD

This research design uses a literature review whose data is taken from several previous research results using the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses) method. Then the review is filtered until it finds a suitable subject matter that can support the analysis and writing plan. The research question is: "How is the implementation of lean management in improving the quality of hospital services?" Articles are identified based on the PICOS method of searching for evidence-based clinical information.

Table 1. PICOS

PCC	Keywords
Population (P)	Hospital, quality of service
Intervention (I)	Lean Management
Comparison (C)	-
Outcome (O)	Improving the quality of health services
Study (S)	All types of studies

Previous research data was searched using databases related to medical topics using Google Scholar and Pubmed. In relation to the idea of writing that uses the words Lean, hospital, and quality of service, then screening is carried out until finding the appropriate

subject matter to support the analysis and writing plan. The inclusion criteria set are research for 2018-2023, there are full texts in English or Indonesian, are journal articles, and focus on the implementation of Lean Management in an effort to improve the quality of hospitals in providing services. The exclusion criterion is using the Lean method combined with other methods, is a literature review study, articles that are abstract, not full text, and cannot be downloaded. Some articles were excluded because they were not related to Lean Management according to the criteria of inculcation and exclusion.

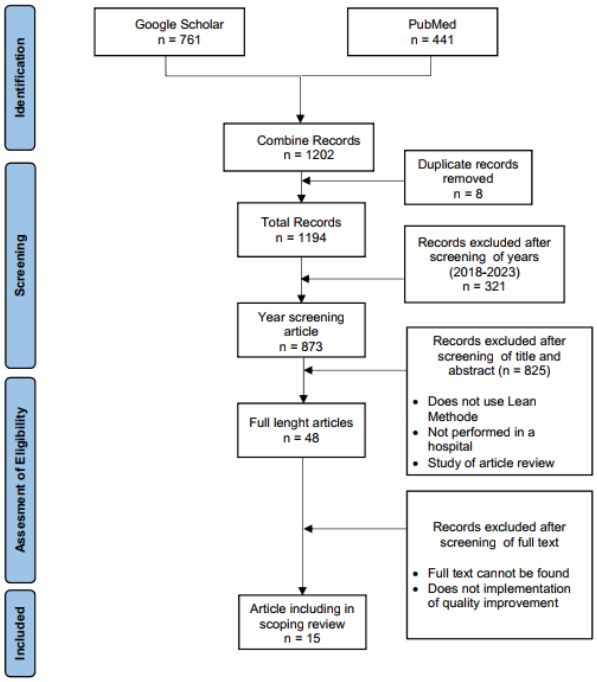

Figure 1. Article selection flowchart based on PRISMA guidelines

RESULTS AND DISCUSSION

Article search results through Pubmed and Google Scholar using keywords obtained 1,202 articles then filtered from duplication and similarity. The articles are then filtered using the format: Academic Journal, last 5 years. After that, filtering of duplication and similarity was carried out, as well as reading abstracts and research results so that many were eliminated and resulted in 48 journals. Furthermore, a full reading of the contents of the journal was carried out and 15 appropriate journals were obtained.

Lean Management implementation begins with the stages of identifying the value of each activity in the process flow. These activities are categorized as having added value (Value Added) and have no added value (Non Value Added) or called waste (waste). Lean Management focuses on reducing waste and increasing Value Added for customers.

Table 2. LEAN

No	Author, Year	Location	Heading	Research Methods	Study Results
1	Paramitha R., 2020	Yogyakarta	Application of Lean in the Redesign of Outpatient Care Services Process of Eye Hospital	Mix method study design	This study shows the length of time of outpatient service in a special eye hospital. The implementation of service redesign using electronic medical records and patient data input via *mobile-tab* as a redesign has proven successful reduce *waste motion*. It is become Solutions for

					hospitals to improve the quality of services without changing cultural heritage buildings.
2	Ferdi, Nuraini A., Nugroho D., 2023	Bengkulu	Improving the Quality of Pharmaceutical Services through *a Lean Management* Approach at the Outpatient Pharmacy Installation of M. Yunus General Hospital Bengkulu	Operational research design with qualitative approach	A lean approach can improve systems and improve quality in service processes
3	Kurniasih D., Nuryakin N., Pribadi F., 2021	Indonesia	Implementation of *Lean Hospital* in Improving Outpatient Services of Internal Medicine Polyclinic (Case Study at Hospital "X" Indonesia)	Case study	The outpatient service process is an *un-lean enterprise* process with a VAR value of <30%. *Waste* that has been identified is *waiting, transportation, overproduction, overprocessing, inventory, motion, human potential* and *defects*. Further proposals were put forward for short, medium-term improvements.
4	Restudana K., Darma G., 2022	Bali	Efforts to Apply the *Lean Thinking* Method to the Outpatient Pharmacy Service Process	Qualitative research design with phenomenological approach	Through *Lean Thinking*, it can be known the *current state* with NVA 54.28% and *waste processing, waiting, transportation.* After the implementation of improvements with lean methods, it can eliminate NVA by 66% and reduce patient complaints in outpatient pharmacy services.
5	Yulianingsih H., Firman, Meliala, A., 2022	Yogyakarta	Implementation of Lean Management in the Emergency Department of Universitas Gadjah Mada Academic Hospital	Qualitative research design with *action research* approach	There was a decrease in *lead time* after the implementation of *Lean Hospital* with VAR values showing an increase in the efficiency of the emergency room service process.
6	Ulfah M., dkk, 2022	Serang, Banten	Improving the Quality of Health Services Using *Servqual* and *Lean Healthcare* Methods	*Servqual* & *lean healthcare*	The dominant factor that becomes a source of patient dissatisfaction is waiting for an examination. Research has identified *waste* that has an impact on patient dissatisfaction, namely waiting while waiting for registration queues and waiting for doctor examinations, *unnecessary inventory* for new medical record creation activities for patients whose medical records are not found, and *overproduction* because patients always ask for the next step when seeking treatment.
7	Sukmadryani Y., Herdwiani W., Wijayanti T., 2023	Karanganyar, Jawa Tengah	*Evaluation, Remedy of Waste, Lean Hospital Method, Process of Inpatient Pharmacy Services in Hospital*	Case Studies	The results of the study identified *critical* waste in inpatient pharmacy services are waste *defects* and *waste waiting*. The root of the problem is that doctors prescribe outside of the existing formulary and enter simultaneously. So that improvements were given with a *lean hospital* approach by monitoring and evaluating the use of formularies, the application of electronic prescriptions, and software to enter data.
8	Sayyida G., Fahma F., dan Iftadi R., 2018.	Wonogiri, Jawa Tengah	*Process Improvement in Outpatient Installation RSUD dr. Soediran Mangun Sumarso Using Lean Hospital Approach*	Case Studies	Through research, it is known that *critical waste* occurs in outpatient services. *Waste waiting* due to queues of morning patients and late doctors, *waste over processing* by providing information repeatedly. *Waste transportation* is the movement of pharmacists from the place of delivery of

					drugs to the compounding department. *Waste inventory* in the form of stacking medical record documents in outpatient poly. Then a fix was proposed for the problem.
9	Lestari Fitra, dkk, 2021	Indonesia	*Lean Hospital To Reduce Waste Using Waste Relationship Matrix*	Case Studies	The results showed the highest waste of waiting time due to *waste over* processing due to carelessness of officers who did not work effectively and did not concentrate. The proposed intervention has succeeded in increasing the efficiency of the BPJS patient registration process, through the Independent Registration Pavilion platform facility. Thus reducing patient registration waiting time and administrative duties.
10	Fu Shui, dkk. 2021	China	*Service Quality Improvement of Outpatient Blood Collection by Lean Management*	Case Studies	Lean management markedly reduced outpatient waiting time for blood draws and increased patient satisfaction from 95.37% to 98.33%. So that the hospital's reputation becomes better and increases the overall construction of the hospital.
11	Abdallah A., 2020	Yordania	*Healthcare Engineering: A Lean Management Approach*	Case Studies	Leadership and upper-level management support are important, but an important finding of the study is the role of clinicians in lean implementation. So it must be involved in the right way. In addition, continuous follow-up is the final requirement for successful implementation.
12	Contreras M. dkk., 2023		*Applying Lean in Process Innovation in Healthcare: The Case of Hip Fracture*	Case studies and action research	This study identified waste in the process of hip fracture surgery in the health sector, namely delays in operating time, transportation, *overproductio*n, and *defects*. From these results, proposals for improvement were submitted.
13	Mozola A., dkk., 2023	Polandia	*Implementation of Lean Management Tools Using an Example of Analysis* of *Prolonged Stays of Patients in a Multi-Specialist Hospital in Poland*	Case study	Application of *Lean Management* in this study to verify the main problems that cause long hospital stays and to develop viable solutions. Financial analysis shows that a slight change in organizational problems can contribute to an improvement in the financial situation of the unit.
14	Lindholm J., dkk., 2018.	Finlandia	*Improving Eye Care Services with a Lean Approach*	Case study	Simplified treatment procedures improve treatment success and waste cutting, as well as shorter lead times and higher operating room utilization compared to standard procedures. So that patient satisfaction increases.
15	Elkholi A, dkk., 2021		*NO WAIT: New Organised Well-Adapted Immediate Triage: a Lean Improvement Project*	Case study	*Lean thinking* can pinpoint barriers and develop interventions to solve ER triage problems. Triage can be dramatically improved on several levels: patient wait times, patient safety, patient experience and satisfaction, and staff satisfaction.

Health services provided to patients are still not effective and efficient, so they are often complained because the quality of service has not met patient expectations. The study above shows efforts to improve hospitals in several countries through a Lean Management approach

to improve service quality in all aspects of service, namely in outpatient, inpatient, emergency department, to surgical services.

Hospitals as health service providers always improve themselves by improving the quality of services to be able to survive in the midst of competitive development of health services. Waste can be identified so that it can be reduced or eliminated in order to create efficient services throughout the hospital.

A. Outpatient Services

The results of Value Stream Mapping (VSM) can show Value Added Ratio (VAR), and if the VAR value is below 30%, the process is considered not lean. (Kurniasih et al., 2021) The implementation of lean management in outpatient services can identify there are still many activities that do not have added value or Non Value Added (NVA) compared to activities that have added value or Value Added. NVA activities in outpatient care, for example, are patients waiting for the next stage, and patients have difficulty knowing the flow of treatment. (Paramita, 2020), (Kurniasih et al., 2021) (Sayyida et al., 2018)

This activity occurs because of waste at the registration stage, doctor consultation, supporting examinations, payments, and drug collection. Waste waiting is a contributing factor to patient dissatisfaction, and is the highest waste in outpatient services. (Ferdi et al., 2023), (Ulfah & Erlina, 2022) The occurrence of waste waiting is most influenced by waste over processing. (Ferdi et al., 2023) This is due to the officer's activity of asking for patient details repeatedly, as well as the officer's error in making documents due to carelessness of officers who are not concentrated and ineffective at work, (Lestari, 2021) and the provision of unclear information when handing over drugs, so it needs to be done repeatedly which results in long waiting times. (Ferdi et al., 2023), (Kurniasih et al., 2021)

The results of Lean Management implementation not only have an impact on decreasing wait times. However, the success of eliminating NVA by 66% in outpatient pharmacy services also has an impact on reducing patient complaints. (Restudana & Darma, 2022) The same thing in a Chinese study on outpatient blood collection services, where there was an increase in patient satisfaction from 95.37% to 98.33%. This also has an impact on reducing doctor-patient conflict, as well as improving the determination of medical diagnosis and patient experience (Fu et al., 2021).

B. Inpatient Services

The implementation of Lean in inpatient care at RSUD Karanganyar identifies critical waste in inpatient pharmacy operations, namely waste waiting and waste defects. The root of the problem is because doctors prescribe drugs outside the formulary, and the delivery of prescriptions is done simultaneously. (Sukmadryani et al., 2023) Lean studies at different hospitals in Poland identified problems in hospitalization that led to long periods of time being treated. Waste waiting occurs due to the length of scheduling radiological examinations (CT Scan or MRI), besides that there are waste defects caused by the quality of the examination results so that waste over processing occurs for repeated examinations (Zdęba-Mozoła et al., 2023).

Efforts to shorten service processing time and increase patient satisfaction value are needed to improve effectiveness, efficiency, and quality of service. Furthermore, improvements in patient care flow are determined through care coordination, formation of multidisciplinary teams, monitoring the use of formularies, as well as the application of

electronic prescriptions and optimization of resource use. (Sukmadryani et al., 2023), (Zdęba-Mozoła et al., 2023)

C. Emergency Services

The implementation of Lean Management in Saudi Arabia is carried out as an effort to reduce the waiting time for triage, so that there is no cancellation of treatment in the emergency room because waiting too long for an examination. The project is carried out by utilizing existing resources, namely rearranging the triage area to accommodate more patients while still paying attention to privacy. This is to reduce waste waiting, motion, and defects. Simple interventions, but can dramatically improve services (Elkholi et al., 2021).

The emergency room service improvement project using the Lean Management method was also carried out at the Academic Hospital of Gadjah Mada University Yogyakarta. Through this research, waste waiting, over processing and defects were identified. The solution to overcome this problem is the implementation of 5S by rearranging the nurse station, reducing unused files, making first in-first out marks on medical equipment cabinets and visual management by marking bed numbers and triage colors on patient medical records. Furthermore, the development of a bed reservation system for patients who will enter hospitalization. Through the implementation of Lean Management, an increase in Value Added Ratio (VAR) was obtained in emergency room services (Yulianingsih et al., 2022).

D. Operation Services

In a Spanish innovation study of hip fracture surgery, it identified the most common waste of delays, waste motion, over processing, and defects. Furthermore, several improvement methods were proposed in the form of collaboration between units (medical, nursing, etc.), discussions of experts, specialists, and management (Abdallah, 2020). Other studies using lean methodologies in the field of surgical services have also improved the treatment protocol of posterior capsulotomy laser Nd:YAG Hospital in Finland. Simplified maintenance procedures successfully increase the use of competencies for successful maintenance and waste cutting. Thus leading to shorter lead times and higher operating room utilization. (Lindholm et al., 2018) This has an impact on increasing patient satisfaction.

CONCLUSION

The quality management system in hospitals is built on the analysis and understanding of the different needs and expectations of all stakeholders involved with the aim of providing the best level of customer satisfaction. Through the Lean Management method, waste that occurs in the process that has been running can be identified, then improving service quality is focused on decreasing Non Value Added activities, as well as increasing Value Added activities.

Hospitals as health service providers must make continuous quality improvements, one of which is with the Lean Management approach as a method to redesign service processes. In the next research, we can dig deeper into the factors that affect the success of implementing Lean Management in order to be a reference for the implementation of continuous quality improvement.

REFERENCES

Abdallah, A. A. (2020). Healthcare engineering: a Lean management approach. *Journal of Healthcare Engineering*, *2020*.

Amalia, T., & Ramadhan, D. K. (2021). Evaluasi Waktu Tunggu Pelayanan Resep Rawat Jalan Berdasarkan PMK Nomor 129 Tahun 2008 Di Rumah Sakit X. *Prosiding Seminar Nasional UNIMUS*, *4*.

Ayuningtyas, D. (2020). Manajemen Strategis Organisasi Pelayanan Kesehatan: Konsep dan Langkah Praktis. *Depok: Rajawali Pers*.

Elkholi, A., Althobiti, H., Al Nofeye, J., Hasan, M., & Ibrahim, A. (2021). NO WAIT: new organised well-adapted immediate triage: a lean improvement project. *BMJ Open Quality*, *10*(1), e001179.

Ferdi, F., Nuraini, A., & Nugroho, D. (2023). Peningkatan Kualitas Pelayanan Farmasi Melalui Pendekatan Lean Management di Instalasi Farmasi Rawat Jalan Rumah Sakit Umum M. Yunus Bengkulu. *Jurnal Manajemen Dan Administrasi Rumah Sakit Indonesia (MARSI)*, *7*(2), 108–124.

Fu, S., Wu, X.-G., Zhang, L., Wu, L.-F., Luo, Z.-M., & Hu, Q.-L. (2021). Service quality improvement of outpatient blood collection by lean management. *Patient Preference and Adherence*, 1537–1543.

Graban, M. (2016). *Lean hospitals: improving quality, patient safety, and employee engagement*. CRC press.

Kotler, P., & Keller, K. L. (2012). Manajemen pemasaran ed. *Ketiga Belas. Jilid*, *2*.

Kurniasih, D., Nuryakin, N., & Pribadi, F. (2021). Implementasi Lean Hospital dalam Meningkatkan Pelayanan Rawat Jalan Poliklinik Penyakit Dalam. *Performance: Jurnal Personalia, Financial, Operasional, Marketing Dan Sistem Informasi*, *28*(1), 1–14.

Lestari, F. (2021). *Lean Hospital To Reduce Waste Using Waste Relationship Matrix (Hasil Check Similarity)*.

Lindholm, J., Laine, I., Hippala, H., Ylinen, P., & Tuuminen, R. (2018). Improving eye care services with a lean approach. *Acta Ophthalmologica*, *96*(7), 724–728.

Naidoo, L., & Mahomed, O. H. (2016). Impact of Lean on patient cycle and waiting times at a rural district hospital in KwaZulu-Natal. *African Journal of Primary Health Care and Family Medicine*, *8*(1), 1–9.

Paramita, R. (2020). Penerapan Lean Pada Redesain Proses Pelayanan Rawat Jalan Rumah Sakit Mata. *Jurnal MANAJERIAL*, *19*(1), 31–41.

Restudana, K. A., & Darma, G. S. (2022). Upaya Penerapan Metode Lean Thinking Pada Proses Pelayanan Farmasi Rawat Jalan. *Relasi: Jurnal Ekonomi*, *18*(1), 101–131.

Rosady, D. S., Lazuardi, L., & Sastrowijoto, S. (2022). Telekonsultasi Klinis: Etika, Disiplin, dan Hukum Kedokteran. *Jurnal Hukum Kesehatan Indonesia*, *2*(01), 1–23.

Sayyida, G., Fahma, F., & Iftadi, I. (2018). Process Improvement in Outpatient Installation RSUD dr. Soediran Mangun Sumarso Using Lean Hospital Approach. *IOP Conference Series: Materials Science and Engineering*, *319*(1), 12077.

Sukmadryani, Y., Herdwiani, W., & Wijayanti, T. (2023). Evaluation, Remedy of Waste, Lean Hospital Method, Process of Inpatient Pharmacy Services in Hospital. *Jurnal Health Sains*, *4*(4), 98–108.

Ulfah, M., & Erlina, E. (2022). Analisis Kemampuan Technological Pedagogical Content Knowledge Mahasiswa Calon Guru Kimia. *JIPI (Jurnal IPA & Pembelajaran IPA)*, *6*(3), 273–286.

Yulianingsih, H., Firman, F., & Meliala, A. (2022). Implementasi Manajemen Lean di Instalasi Gawat Darurat Rumah Sakit Akademik Universitas Gadjah Mada. *The Journal of Hospital Accreditation*, *4*(02), 83–90.

Zdęba-Mozoła, A., Kozłowski, R., Rybarczyk-Szwajkowska, A., Czapla, T., & Marczak, M.

(2023). Implementation of Lean Management Tools Using an Example of Analysis of Prolonged Stays of Patients in a Multi-Specialist Hospital in Poland. *International Journal of Environmental Research and Public Health*, *20*(2), 1067.