IMPLEMENTATION OF LEAN HOSPITAL IN ORDER TO IMPROVE QUALITY OF OUTPATIENT SERVICES IN THE HOSPITAL: LITERATURE REVIEW

Ayu Muthia, Siti Utami Dewi, DWS Suarse Dewi

Hospital Administration Study Program, Fatmawati College of Health Sciences, Jakarta, Nursing Study Program, Fatmawati College of Health Sciences, Jakarta

Abstract

An operational approach to organizational management known as lean management is grounded in the principles of respect for individuals and continuous development. By focusing on customer value and eliminating current waste, work is systematically carried out through available resources. The aim is to enhance process speed, quality, and efficiency in the improvement of quality.The purpose of this literature review is to investigate the implementation of lean hospitals in outpatient agencies and their impact on quality improvement. This study collated articles from various databases including ProQuest, ScienceDirect, ClinicalKey, Springer Link, and Google Scholar using the keywords "lean hospital," "quality improvement," "service," and "outpatient" to ensure inclusivity. The articles selected were published from 2013 to 2023 to narrow the study scope. Based on the review, 11 articles discuss implementing lean hospital practices to facilitate identifying non-value-added activities. Lean hospitals can help with quality and cost control in the era of national health insurance.

Keywords: Lean Hospital, Service, Quality Improvement, Outpatient.

Introduction

Hospitals play a vital role in enhancing public health. The primary objective of hospital operations involves offering healthcare services to patients. This represents an independent incentive that motivates health service providers like hospitals to strive for enhancing the quality of their offerings. On one hand, hospitals must provide exceptional service to patients, while on the other hand, they play a crucial role as institutions in public health services.

Both privately-owned and government-owned hospitals are necessary for the community, with hospitals obligated to provide the utmost service to meet the needs of the community. To prioritize the quality of hospital health services, it is important to meet the needs of consumers who use these services. Patients are more likely to feel satisfied when the health services they receive meet the expected quality standards.

The implementation of lean principles in healthcare services can effectively enhance the quality-of-service while being cost-efficient. Waste reduction, commonly known as healthcare waste, is determined based on output and flow. Waste, which refers to the overproduction that leads to prolonged wait times, process duplication, or repetitive procedures, is minimized using lean strategies.

There is extensive empirical evidence supporting the positive impact of applying lean principles in hospitals. Vliet et al. (2010) discovered that the utilization of lean strategies can reduce repeat outpatient visits by 23% and simultaneously increase patient accessibility by 42% at The Cataract Clinic in The Rotterdam Eye Hospital. Nationwide Children's Hospital's implementation of lean methodology resulted in cost savings of $8,197 per week in medical expenses and a 2.6% decrease in drug purchases annually (L'Hommedieu and Kappeler, 2010).

Tanninecz (2004) observed that the role of lean in relation to emergency service times at Hotel- Dieu Grace Hospital Windsor, Ontario, Canada, yielded service time savings. Results of the first experiment showed a saving of 90 minutes, with service times dropping from 120 to 30 minutes. In the second experiment, service times decreased from 103 to 54 minutes, resulting in a saving of 49 minutes. Savings of 45 minutes resulted from the third experiment, with service times dropping from 94 to 49 minutes. According to a study by Dr. A. Heri Iswanto, General Director of RSIA Kemang, implementing Lean principles in hospitals resulted in an 11% increase in customer satisfaction from 76% to

87%. The improvement was mainly related to tangible areas and empathy. Patients felt the impact of this management approach firsthand.

Meanwhile, research conducted by Muthia, et. al (2020) indicates that inadequate implementation of lean hospital principles within hospital outpatient units can lead to several drawbacks. The patients' value assessment revealed excessive waiting times during the registration process and at the Tugu Ibu Depok Hospital pharmacy, along with multiple instances of waste throughout the existing outpatient unit's workflow activities.

National delegations by the Hospital Accreditation Commission and transnational delegation bodies, such as the Joint Commission International (JCI), are significant in guaranteeing quality care. Nevertheless, dependence on delegation alone is insufficient as a quality assurance (QA) tool. Ultimately, a system is required, which can be utilized as a dynamic quality of care improvement (QI) instrument and ensures long-term sustainability. In fact, the National Accreditation document recommends several styles for improving service quality, which are similar to Lean. The term 'Lean' was introduced by John Krafcik, James P. Womack, Daniel T. Jones, and Daniel Roos. It refers to the operational leadership and organizational systems of a Japanese vehicle company during the Toyota Product System (TPS) era, which saw a significant increase in profitability. Meanwhile, Lean was introduced to healthcare and hospitals in 1990 (Mozola et al., 2023). The Lean principle aims to decrease waste, boost efficiency, and hasten response times in hospitals. Moreover, this principle endeavors to promptly detect problems that currently exist or will arise in the future, implement consistent improvements, and establish a dependable and stable environment (Wati, Muhardi, & Nu'man, 2021).

Methods

The method used in writing this article is literature review, which is a study used to analyze literature that has been selected from various sources and produce a conclusion. This literature begins with reviewing articles identified through the ChlinicalKey, ProQuest, Springer Link, Google Scholar and ScienceDirect databases. The keywords used for the search were the keys "Lean" AND "Hospital" OR "Hospital" AND "Quality Improvement" AND "Service" AND "Outpatient", the search for supporting articles was limited to 2013-2023. In principle, this literature review is a research method carried out by summarizing the results of primary research articles in order to present more comprehensive and balanced data.

The selection of articles was analyzed and synthesized based on inclusion and exclusion criteria. The inclusion criteria for the selection of articles used are the population of cancer patients, using English and the type of publication is full text articles and academic journals. The article search was conducted in July-August 2023. The stages carried out in making this article are as follows: 1) field identification of the topic of interest; 2) create clinical questions based on the PICO framework; 3) determine inclusion and exclusion criteria before conducting a literature search; 4) conduct a literature search using keywords and predetermined inclusion and exclusion criteria; 5) conduct data extraction and analysis; 6) identify results.

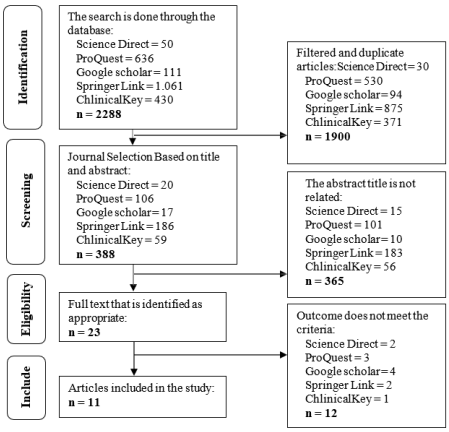

Image 1 PRISMA Flow Diagram

Results

Eleven articles related to the determined topic were obtained by conducting a keyword-based search. These articles were reviewed and met the presented criteria, as shown in the table below.

Table 1
List of Search Result Articles

No	Journal Identity	Method	Results
1	Lean-ing Method in an Emergency Department of the Italian Epicenter of the COVID-19 Outbreak: When the Algorithm Makes Difference (Desai *et al.*, 2021)	Quantitative with retrospective analysis	Lean implementation in the ED has proved to be effective in optimizing the handling of Covid-19 patient cases. This model reduces overcrowding, costs, and wasted time compared to the traditional model.
2	Applying Lean Principles to Reduce Wait Times in a VA Emergency Department (Vashi *et al.*, 2019)	Quantitative with experimental method	By utilizing Lean principles, VAPAHCS successfully enhanced the flow of Veterans in the ED. Employing Lean methods fostered the formation of interdisciplinary teams and facilitated cross-departmental problem-solving, providing a way for the VA ED to tackle systemic factors and root causes of ED overcrowding and thereby promoting better care for Para-Veterans.
3	Lean thinking to improve emergency department throughput at AORN Cardarelli hospital (Improta *et al.*, 2018)	Quantitative and Qualitative with Mixed method approach	The study aimed to identify procedures for improvement by analyzing non-value- added activities. It showcases the application and effectiveness of Lean Thinking in the ER process by enhancing service efficiency and reducing waste, particularly waiting time.
4	Increasing Competitiveness through the Implementation of Lean Management in Healthcare (Prado *et al.*, 2020)	Participatory methodology from a lean management perspective	The implementation of this methodology resulted in improvements in patient flow management in terms of effectiveness, efficiency and quality, but also an internal transformation towards a lean culture.
5	Implementation of Lean Management Tools Using an Example of Analysis of Prolonged Stays of Patients in a Multi-Specialist Hospital in Poland (Mozola *et al.*, 2023)	Applied Research to present the application of Lean Management (LM) tools in Polandi hospital	The analysis results indicate that utilization of lean management techniques can enhance the functions of hospitals.

6	Does Lean healthcare improve patient satisfaction? A mixed-method investigation into primary care (Poksinska, Filipek and Engström, 2017)	Mixed-method strategy, conducting qualitative case Studies and analyzing quantitative data from the Swedish National Patient Survey (NPS).	The case study revealed that the implementation of lean healthcare focused primarily on efficiency without taking into account the patient perspective. Moreover, the quantitative study did not demonstrate meaningful improvements in patient satisfaction over the course of time.
7	Experiences of leaders in the implementation of Lean in a teaching hospital-barriers and facilitators in clinical practices: a qualitative study (Aij *et al.*, 2013)	Qualitative with semistructured in-depth interviews	The results indicate that the Lean Training Program led to positive outcomes in both personal and professional skills, with these effects being observed four months after program completion.
8	Optimizing the Implementation of Lean Hospital in the Outpatient Unit of Tugu Ibu Depok Hospital (Muthia, Riandhini, Sudirja., 2020)	Case study with a qualitative approach through observation and data review	The analysis of work processes in the outpatient unit revealed substantial waste, resulting in the value-added activity ratio falling below 30%. The problem lies in the four areas of human/man, method, machine, and environment.
9	Implementation of Lean Hospital in Improving Internal Medicine Polyclinic Outpatient Services (Case Study at Hospital "X" Indonesia) (Kurniasih, Nuryakin and Pribadi, 2021)	Qualitative through direct observation, in-depth interviews and document review.	The results indicate that the polyclinic unit has the highest Non-Value Added (NVA) value at 97.09% with a Value Added (VA) of only 2.91% and a waiting time of 107.22 minutes for non-insurance patient services with supporting examinations. The waste is in the form of waiting, motion, transportation, human potential, overproduction, defects, inventory, and overprocessing.
10	Implementation of Lean Management in Outpatient Services for BPJS Patients at Hermina Depok Hospital in 2017 (Noviani, 2017)	This qualitative method observes the time spent by BPJS outpatients.	The results indicate that 90% of service time is comprised of non-value added activities, with only 10% being value added. After analyzing the future state through lean methods, such as 5S, Kanban Inventory, and visual management, non-value added activities decreased to 78.30% and value added activities increased to 21.70%.
11	Implementation of Lean Hospital in Emergency Unit Services at RSUD Bayu Asih Purwakarta Regency (Wati, Muhardi, Nu'man, 2021)	Qualitative with an action research approach. Informants were selected non-probability using purposive sampling technique.	The results indicate that waste identification was the primary source of waste waiting, with an added value of 23.68%. Moreover, the ratio of added value to non-value added activities was less than 30%. Applying lean methodologies resulted in improved waste waiting.

Based on Table 1, which displays the results of a literature review of 11 journals, the selected articles pertain to implementing lean hospital practices to enhance outpatient services quality. The articles encompass 11 designs of both qualitative and quantitative research. Furthermore, the article review results indicate a need for lean hospital practices in order to best meet patient needs and provide optimal service by reducing waste and thus creating added value for the hospital. The use of lean practices in hospitals has become widespread for service companies, hospitals included. The application of lean concepts has a positive impact on quality improvement, cost reduction, increased safety, improved culture, and a better environmental situation.

Discussion

This literature review highlights eleven articles that primarily focus on the impact of implementing lean hospitals on improving quality, reducing costs, improving safety, and improving the environment. Lean is a systematic and organized approach for identifying and removing non-value adding activities or waste through continuous and radical improvement. This is achieved by using a pull system to flow products (materials, work-in-process, and outputs) and information between internal and external customers to strive for excellence and perfection. Based on the above definitions, Lean emphasizes the continuous increase of customer value by identifying and eliminating non-value-added operations or waste (Wati, Muhardi, & Nu'man, 2021).

Efforts to improve the overall quality of healthcare services, particularly those provided at BPJS outpatient facilities, have been driven by the public's increasing awareness of healthcare information and demand for quality healthcare services, as well as the availability of BPJS outpatient services. To achieve this, several initiatives have been implemented to provide superior services, focusing on ambulatory care. However, there are still issues with prolonged (and ineffective) waiting times, systems, and procedures in the process flow, especially in outpatient services (Noviani, 2017). By identifying the main reasons for substandard standards, most of the hospital's problems can be identified. Visual management, 5S, and Kanban strategies are a few of the approaches adopted in lean implementation practices. "Sort, Sweep, Simplify, Standardize, Sustain/Self-Discipline (5S)" refers to ideas that aid businesses in maintaining tidy and organized workplaces. Kanban, on the other hand, is a system of visual signals used to indicate when new parts, supplies, or services are needed, including the quantity and time required (Lawal et al., 2014).

One method for identifying and minimizing waste or non-value added activities involves applying lean management principles. These methods evaluate operations to identify and eliminate waste and inefficiency, generating new solutions to improve operations, increase efficiency, and reduce costs. Delays in examination lead to delayed diagnoses, longer waiting times, and less satisfied customers. Time reduction can lead to increased patient satisfaction, quality of care, employee satisfaction, and ultimately hospital revenue (Lestari, Suryawati, & Sugiarto, 2020).

Lean management is a management strategy that can apply to all organizations, as it pertains to process improvement. All organizations, including healthcare organizations, consist of a set of processes or a series of actions designed to create value for customers/patients who use or depend on them (Prado et al., 2020). The significance of Lean in healthcare is to increase patient value by identifying, minimizing, or eliminating process waste through the collaboration of medical professionals and staff in simplifying, reducing costs, increasing effectiveness, and ensuring safety in their work (Lestari, Suryawati, & Sugiarto, 2020).

Conclusion

Based on the results of the review, it can be concluded that Lean Hospital implementation can reduce the length of stay (LOS), so it can be used as a method in hospital efficiency. Lean hospital guides and facilitates the identification of non-value-added activities in the process, thus helping to reduce unnecessary actions or processes with a concomitant increase in service efficiency. In addition, it can help healthcare organizations meet goals and standards related to timely and effective care. Hospital leaders can develop Lean according to the conditions of each hospital or work unit. Currently, Lean Management is used by various hospitals (RS) as one of the efforts to carry out quality control and cost control in the era of National Health Insurance (JKN).

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