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The Effectiveness of Lean Management in Health Organizations by Application to King Salman Medical City

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ABSTRACT

The study aimed to determine the effectiveness of the application of lean management on the performance of employees in King Salman Medical City through the dimensions of lean management, which are (organizing the work site, continuous improvement, and standard work). The study used the descriptive approach, and the questionnaire tool was used and it was distributed to a sample of (33) employees of King Salman Medical City in Madinah. The researcher used Cronbach's alpha method to measure the validity and reliability of the study tool, and percentages, frequencies, arithmetic mean, and relative weight were employed. The study found several results, the most important of which are: the existence of a statistically significant relationship for the effectiveness of lean management in King Salman City on the performance of workers through the three dimensions (standard work, workplace organization, continuous improvement).

The effectiveness of the application of lean management through the organization of the workplace is through the interest of workers in the health institution to arrange their workplace and their files.

The effectiveness of the application of lean management through continuous improvement is through the keenness of the health department to introduce the latest technological means to improve the performance of the tasks of workers.

The effectiveness of applying lean management through institutional work is based on the health organization's reliance on electronic computing in conducting and completing transactions.

Keywords: lean management - health institutions - health organizations - employee performance - King Salman Medical

Introduction:

Lean is an approach to business that emphasizes eliminating waste and minimizing waiting times to provide the highest possible value to patients. The long-term goal is to alter the way an organization operates by altering the way its members think and feel about their work .It is based on the Toyota Production System and asks, "What value is being added for the customer?" at each stage of the process. The healthcare sectors of the United States, United Kingdom, Australia, and now Canada have recently shown success in using these ideas. Many authors, despite evidence suggesting lean's popularity in healthcare, characterize its implementation as pragmatic, spotty, and fragmented. Lean management's implementation in healthcare can be as comprehensive as the overhaul of an organization's whole approach to doing business. Although lean thinking was first developed in the automotive industry, there has been little study of its viability in healthcare. Lacking proper concepts openly articulated, research methodologies, suitable analysis, and result measures, primary studies are generally unreliable. However, little is known about the unsuccessful attempts or hurdles to its implementation in health care, despite the fact that the majority of studies reported on effective lean initiatives. A rigorous evaluation of the research on the implications of lean implementation, particularly the potential effects on professional practice and health care outcomes in different settings, is thus necessary (Hussain et al,2022).

Lean management benefits organizations by focusing on improving all parts of the business at every level of the organization's hierarchy. Specifically, managers benefit from benefits such as better use of resources, improved focus, and increased productivity and efficiency. The primary purpose of lean management is to eliminate any waste of time, effort, or money by identifying each step in the management process, and then reviewing or eliminating those steps that do not create value (Emily McLauglin 20223).

The main goal of agile management is to improve efficiency and effectiveness by reducing the time an employee spends on non-value activities, and improving work flow, which can include waiting times, unnecessary transportation, excess inventory, unnecessary processing, and defects. The idea of lean management came in the late 1940s, when Toyota laid the foundations for lean manufacturing. It aimed to reduce processes that do not bring value to the product, and the company succeeded in achieving significant improvements in productivity and efficiency. Lean management also emphasizes the importance of respecting and empowering the employee and encourages the development of a culture of problem-solving and continuous improvement (Kanbanize 2022).

Lean management in health organizations is the application of "simple" ideas in healthcare to reduce waste with continuous process improvement, and to improve patient satisfaction and patient outcomes while reducing costs. Through agile management in health organizations, doctors and administration staff can identify areas of imbalance, identify areas of waste, and eliminate anything that does not add value to patients (Catalyst 2018).

Accordingly, the current study seeks to address the extent of applying lean management in King Salman Medical City, Madinah.

Problem Statement:

Health systems in health institutions suffer from some crises within the health system. Because of ignoring proper practical planning, in light of administrative cadres that are not properly trained, administrative conflicts that almost never end until they begin, routine administrative operations, lack of awareness of the nature of the social context in which the health institution operates, the absence of real data and information about the reality of health institution management, it is even impossible to provide These institutions and transferring them from mere routine operations to development and innovation processes based on effective planning, coordination, organization, follow-up and evaluation, and these obstacles lead to waste or loss in achieving quality health care.

King Salman Medical City is making good efforts to improve the level of health services. Among these efforts is its accreditation as an accredited training body for the general surgery program by the Saudi Commission for Health Specialties. Added to this accreditation is a series of other accreditations in many specialties for the medical city, which is the first integrated medical city serving the Medina region. However, according to the researcher, the efforts exerted were not sufficient to reach a satisfactory performance of the medical city. There are still a number of challenges facing the medical city, with which it is inevitable to use administrative approaches to provide health care services. Some studies have dealt with the waste in health institutions, including Redundant steps, unnecessary approvals, redundancies that affect patients, staff and the organization as a whole, including errors and defects in production and underutilization of worker skills. Accordingly, the research problem can be formulated in the following question:

What is the effectiveness of lean management in King Salman Medical City in Madinah?

Objectives:

The researcher seeks to achieve the following goals:
1. Examine the effectiveness of applying lean management by organizing the work site.
2. Exposing the effectiveness of applying lean management through continuous improvement.
3. Recognizing the effectiveness of applying lean management through standard work.

Methodology:

The study uses the descriptive approach, as it does not stop at the limits of describing the phenomenon only, but rather goes beyond it to analysis, interpretation and comparison of results in order to reach meaningful assessments to understand the problem.

Research importance:

The importance of the study is determined as follows:
1. The research sheds light on a modern administrative method, which is lean management.
2. The current study provides a scientific service on health care services and the identification of modern administrative methods in the field of hospital management.
3. The present study can help planners of healthcare systems to clarify the requirements of lean management; Which leads to reducing waste to achieve sustainable development in health institutions.
4. The current study may benefit officials in developing the specialty of hospital management.

Research terms:

Lean Management:
Lean management is an approach to managing an organization that supports the concept of continuous improvement, which is a long-term approach to business that systematically seeks to achieve small, incremental changes in operations to improve efficiency and quality (Emily McLauglin 20223).
health organizations:
A health institution is an organization whose primary objective is the care or treatment of patients or the promotion of public health, and a health institution (other than a hospital) through which health services or health support services are provided as defined in the Dictionary of the Health Services Act 1997. A health institution may mean a hospital or home A care, convalescent home, maternity home, health center, infirmary or other institution in which other health or medical services are provided free of charge or upon payment of a fee (Law Insider Dictionary 2023).
Medical City:
A medical city is a comprehensive health care center, or a large hospital, and the difference between a hospital and a medical city is like the difference between a small store and a huge store, and unless you are sure that the items are in the small store, you have to go to the huge store that contains everything (MTM 2023).

Literature Review:

1. **Lean Management:**

It is critical at this time to develop process optimization strategies that cut down on waste while keeping or even raising quality. Lean Management emerges in this setting.
The core beliefs and stances of management that are essential for achieving and maintaining continuous improvement through time constitute this philosophy. Both the rigorous reduction of waste and the commitment to long-term relationships based on constant improvement and mutual trust form the cornerstones of this management philosophy (Toussaint & Berry,2013).

1.1. **Concepts:**

Lean Management focuses on eliminating waste and increasing value.
Waste:

The term refers to the recurring issues and distractions that get in the way of our productivity. established seven waste categories; subsequent studies expanded that to nine:
1.Defects: the amount of time lost due to mistakes, failed inspections, or unsuccessful repairs.
2. overproduction occurs when more is produced than is required or when something is completed too quickly.
3. transportation refers to product system movement that isn't obligatory.
4 Being idle while waiting for something to happen or something to do at work.
5. Excess inventory results in waste, spoilage, and higher expenses associated with storage and transportation.
Sixth, motion refers to employees' needless motion throughout the system.
7. Excessive processing: wasting time and resources on tasks that aren't important to the customer or that aren't meeting the needs of the patient population.
8. Human Potential: the wasted talent and potential of employees because management fails to value their input, consider their suggestions, or encourage them to advance in their professions.
9. Opportunity lost by failing to stay abreast of developments in its target market and align strategy for optimal success there (Bhamu et al,2014).
Value:
It is more nebulous than waste because it fluctuates with the nature of the service being offered and other factors. However, in most cases, the price is set by what the market will bear.
Value-added (VA), required (NNVA), and unneeded (UNVA) actions all play a role in the delivery of services.
NNVA tasks are those that must be completed because of a legal mandate. Such regulations may not be within the purview of the organization or department, but must be followed all the same (for instance, the Data Protection Act or the Consumer Credit Act) or are essential to the business's survival (for instance, hiring new employees, maintaining vehicles, or providing new employees with necessary training).
An activity's status as a business need does not preclude any related enhancement activities. Even if it must be followed in some cases, the fact that it is made up of non-value-added (NVA) activities that may be omitted or modified to optimize the process does not render Lean Management concepts irrelevant (Abdallah et al,2020).
The Lean methodology provides us with concrete guidelines for identifying VA and NVA tasks. For an action to qualify as VA, it must adhere to the following three criteria:

- The first requisite is that the client be open to paying for the service.
- Second, the product or service must be altered in some way during the process.
- Third, first-time performance must meet or exceed expectations.

If any one of these conditions is missing, then the action is not non-violent.

1.2. **Principles:**

The goal of Lean Management is not to reduce expenses so much as to maximize efficiency and quality of output. Lean Management's five guiding principles are as follows. Excellence through value, flow, pull, and continuous improvement.
"precisely specify value by specific product, identify the value stream for each product, make value flow without interruptions, let the customer pull value from the producer, and pursue perfection," the authors write.
There are a variety of approaches that can be employed to realize the customer's value notion. From the Department's perspective, for instance, value-added steps across department boundaries are attained by removing non-value-adding stages. In order to avoid delays, such as those caused by batches or quality issues, the workflow needs to go smoothly. From the perspective of the work chain as a whole, letting work and supplies be pulled on an as-needed basis eliminates the need to hand off tasks to the next process or department. Business strives for perfection through relentless innovation so that it may be hailed as a global leader in its field (Prado-Prado et al,2020).
Because of increased international competition, establishing a company as a market leader has become more difficult as a result of globalization. Therefore, it is crucial to enhance service quality in a way that is both efficient and long-lasting.
Therefore, the business should strive to establish norms that will allow it to efficiently oversee the delivery of high-quality services. In addition to gaining renown for its stringent criteria and dedication to regularly reviewing and updating best practices based on tested and assessed indications. In this way, consumers are assured of receiving cutting-edge care that is also highly effective.
The goal of management is to achieve perfection in all aspects of the process, from the number of steps involved to the amount of time and data required to produce and deliver the final product. But in order to do so, it is vital to foster a culture in which resources are actively engaged and incentivized to pay close attention to the most effective means of providing services and to be invested in their ongoing enhancement (Rotter et al,2017).

A new, more comprehensive framework, called the Eight Principles of the Lean Business System, has recently been developed based on the original Lean Principles.

1.One must first comprehend the activity's intended function in order to bring the entire organization into harmony with it.

2.The second factor is the company's processes; by enhancing them, they may hopefully reduce expenses. However, this can be achieved only if both innovation and order are valued as assets to the company.

3.To make the organization's goals the employees' goals, the leader must have the ability to persuade them. The best method to advance an entire organization is with focused and charismatic leadership, strong ideals, and open knowledge exchange. The leader-employee pair is crucial to the success of the organizational culture model in achieving the intended results. So, the culture of a company is the shared worldview that shapes how people behave in the workplace. Taking the time to explain the reasoning behind upcoming organizational changes and including workers in the process demonstrates respect for them.

4. Pull - takes into account three factors:

a. Pull-based delivery requires an initial focus on learning about the client and their wants and needs. Second, to find methods of either decreasing demand variability or boosting effective demand volume. Last but not least, we need to set up a supply system that makes sense for the final product or service.

b. Pull-based improvement requires a cross-cutting connection between improvement effort and corporate, customer, employee, or societal needs.

c. Pull-based training entails a consultative process between a team's leader and members to determine what skills and knowledge the team most needs to improve. It's based on what your team needs to succeed in terms of knowledge and abilities.

5.Tools aimed for avoiding customer complaints about poor quality or additional labor thereafter are included in the fifth category, "Prevention." They are designed to standardize and stabilize procedures, but they must be weighed against long-standing patterns of behavior in the workplace.

6. collaborating with other businesses to improve the service or product cycle is called "partnering."To put it another way, "Lean Thinking must be "green" because it reduces the amount of energy and wasted byproducts required to produce a given product," Jim Womack pondered at the turn of the millennium.

7. The planet Indeed, it is widely noted that organizations that follow lean principles are able to cut human effort, space, and scrap by 50 percent or more, every product produced...this suggests that... lean's job is to be green's crucial enabler as the vast waste in our current methods is reduced".

8. Perfection - every business should create a vision of its own perfect state, outlining realistic stages, and creating its own road map to get there. To build a learning organization that can sustain the gains and pursue continuous improvements, it is important to give thought to both the what and the how of measurement along the Lean journey.

These guidelines enable an effective and efficient production system with minimal waste and low rejection rates. Reduces burnout, which in turn boosts morale and participation, which is essential in transforming an organization into a center of excellence (Ahn et al,2021).

1.3. **Techniques:**

The implementation of Lean methodologies might vary greatly depending on the type of business and the industry to which it belongs. Each company or organization has its own history, values, and objectives. The best mentality is one of perpetual curiosity, vigilance, and reflection.

Managers and workers alike can learn a lot from this hands-on experience. The first group typically gets bogged down in the weeds of routine work and fails to see excess.

Most managers have not experienced the difficulties faced by their staff members on a daily basis. As a result, understanding how various resources affect regular activities is crucial. At the very least, this is the case because the resources in question are the ones providing the service to customers, and it is in everyone's best interest to guarantee that this service is of the greatest possible standard (Crema & Verbano,2015).

Methods of operation need to be evaluated and standardized in light of industry standards. Quality management can be improved by standardizing procedures. Managers need to perform in-person audits and observations to ensure that work standards are being adhered to, with the understanding that such standards are not set in stone and will need to be refined over time.

Value-added work is often prioritized, and efforts are made to do it as quickly and effectively as possible. Lean Management's study of final-product-related activities is also beneficial since it zeroes in on wastes in the associated processes. Waste is prioritized over other potential areas of improvement like cutting down on value-added time because there may be more of a chance to do so.

Because they allow us to put philosophical and conceptual ideas into practice, technical instruments are invaluable in conducting process analysis and diagnosis and reducing waste. The following are some examples of tools used in the execution of Lean management (Bhamu,2014).

2. **Previous Studies**

According to Marsilio, M., & Pisarra (2021), Lean management in healthcare seeks to enhance service quality, reduce waste, and boost productivity. The goal of this research is to help progress the field by identifying the most important socio-technical criteria for successful lean initiative implementation and management.Plan of Study Lean management in healthcare was the subject of a recent systematic literature study. Moving from the socio-technical drivers that sustain enterprise-wide quality improvement initiatives and the lean implementation procedure in health care, the components of the socio-technical system are identified. Internal processes, patient, learning, and financial dimensions are used to categorize the effects of lean management. The results show that the existing and growing interest in lean management is supported by the 28 reviews retrieved. More than 60% of them advocate for a system-wide approach, yet in practice, we mostly see adoption in siloed groups or departments, or the usage of specific approaches and technologies. Organizational design, operational methods, and software, as well as company culture and top-level management, are the most studied examples of the socio-technical interface. All four dimensions are said to have experienced significant effects. This assessment highlights the need for a uniform impact measurement approach and the absence of evidence on the long-term viability of lean results. The novelty of this paper lies in the fact that it is the first systematic review to focus on the positive effects that the socio-technical aspects of the lean management strategy have on patients, internal processes, learning, and finances.

Ali et al (2020),Scrub and circulator nurses have a lot on their plates, and it might have an impact on their ability to carry out their perioperative nursing duties effectively. Therefore, in order to achieve optimal performance in perioperative nursing positions, attention must be paid to identifying areas of improvement and using lean management solutions to improve the quality of care given to patients. To what extent do lean management solutions improve perioperative nursing responsibilities was the focus of this research. Concept and Ambience: The investigation was conducted using a quasi-experimental approach in the operating area of the brand-spanking-new Dar Al Fouad Hospital in Cairo, Egypt. Method of Information Gathering: The perioperative nursing roles of the scrub nurse and the circulator nurse were to be evaluated using an observational checklist tool, which included two primary parts: the first part was dedicated to observing the performance of the scrub nurse job, and the second part was dedicated to observing the performance of the circulator nurse position. Results: The results of the current study showed that after implementing the lean management strategies, the scrub nurses' met standards performance in perioperative nursing roles increased from above half normal to above three quarter, and the circulator nurses' met standards performance increased from below one fifth to near three fifth. Implementing lean management strategies had a beneficial effect on the perioperative nursing roles of scrub and circulator nurses by reducing the number of non-value-added and volume-based tasks. This was accomplished by creating new supportive roles, such as anesthesia nurse, post-anesthesia care unit nurse, surgical technologist, instrumentation technician, nurse aids, store keeper, and lean team. All OR staff should participate in a focused training program, and both traditional perioperative nursing duties and emerging supportive perioperative duties should be evaluated on a regular basis. To further understand the impact of lean management on perioperative nursing in a variety of contexts, more study is needed.

The goal of this research was to define how Lean is understood in healthcare and to look for obstacles to its successful application in healthcare, as it has been in mass production. Based on the quality goals of healthcare stated by the IOM in 2001, a systematic literature review approach was employed for this paper, and literatures were categorized accordingly. The results show that 52 different pieces of literature on lean healthcare are examined, categorized, and evaluated. Literature reveals a number of obstacles, such as a lack of readiness for Lean implementation, problems with translating lean jargon, trouble defining customers in healthcare settings, a focus on specifics rather than big picture principles, and a failure to pursue continuous improvement in Lean practices. Importance - The study's findings highlight key considerations for a successful lean healthcare rollout (Parkhi,2019).

Mahmoud et al (2021), Healthcare organizations are increasingly adopting lean management strategies. However, their effects on workers have not been synthesized comprehensively. This systematic literature analysis tries to synthesize the information on how Lean Management approaches have affected frontline healthcare workers. In order to get useful information, researchers scoured several databases in February of 2020. The following criteria were applied to studies for inclusion: scientific, published in English or French, examining the effects of Lean on frontline healthcare workers, and subject to peer review. Participants varied widely across the included research. Using a thematic analysis, the data was coded and organized. The studied publications' quality and methodological rigor were evaluated to determine how confident we may be in their conclusions. Only 17 of the 998 papers found were considered for inclusion in the review. Results were organized into four categories based on the number of

occurrences: (1) morale, motivation, and job satisfaction (n = 9), (2) work intensification, job strain, anxiety, stress, and dehumanization (n = 7), (3) collaboration, communication, and coordination (n = 6), and (4) learning, innovation, and personal development (n = 3). Eleven of the articles reported favorable effects of Lean on frontline healthcare workers, while three reported negative effects and three showed mixed effects. This analysis is the first to synthesize the available literature on Lean's effects on frontline health professionals and to call attention to the gaps in that research. The findings showed a spectrum of positive, negative, and mixed effects, highlighting the need for further empirical investigation into the causes of these variations.

Lawal et al,(2014), Lean is a methodology and set of operational principles that maximizes value for customers by cutting down on waste and waiting times. It stresses customer focus, employee participation, and constant innovation. Few studies have examined how lean concepts could be applied to the healthcare industry. Following the Cochrane Effective Practice and Organization of Care (EPOC) methodology, this document serves as a protocol for a comprehensive evaluation. In particular, this study seeks to collect, classify, and synthesize the available literature on the possible effects of lean implementation on professional practice and health care outcomes in health care settings. We have refined our keyword search for Medline, and soon we will apply this same approach to other databases. The review will include information on all methods used for searching. Randomized studies, non-randomized controlled trials, controlled before-and-after studies, and interrupted time series will all be analyzed using the same methodology provided by the Cochrane EPOC group. We will also incorporate pertinent case reports and other non-comparative literature such as cohort and case-control studies. We will classify and analyze the review's findings based on the study design used, the quality of the studies included, and the types of implementation that were reported in the primary studies. Research findings will be presented in tabular format. The overarching goal of this protocol-driven systematic review is to discover, evaluate, and synthesize the evidence supporting the application of lean activities in healthcare settings. Therefore, the review will furnish a foundation for the reliability of health care reports of the success of lean and implementation approaches.

Methodology:

Study design:

The research design is the overarching strategy that links the many aspects of the study together in a coherent and meaningful way. This action was taken to guarantee that the research issue was resolved thoroughly. Data collection, measurement, and analysis can all be viewed as steps on the study design's road map (Sileyew,2019).

The current study is a field study of the effectiveness of lean management in Saudi health organizations in general, and in King Salman Medical City in particular.

Study population and sample:

According to Dawson (2002), a population is representative of a pool of components or subjects that the researcher believes to have the necessary information or data, as well as of particular insinuations that may be made about the group. A population is essentially a group of individuals, which may include humans, animals, and inanimate objects, each of which possesses a certain trait that academics find extremely interesting to investigate. Because of the resource's financial, temporal, and objective limitations, academics may not be able to communicate with every member of the community they are trying to reach. This limitation has a direct bearing on their capacity to do so.

The study population consists of all workers in the administrative field and the health field in the Saudi health organizations, and in the employees of King Salman Medical City in particular. Where the researcher selects a random sample of (33) individuals.

Study tool:

According to Dewaele (2018), questionnaires can be defined as surveys or collections of questions that are used to collect quantitative and/or qualitative data from respondents.

The tool used in the study is the questionnaire, which consists of two parts:

The first section: characteristics of the study sample, consisting of gender, age, educational level, and job experience.

The second section: axes of the study, and it consists of (15) paragraphs divided into three as follows:

- Organizing the work site.
- continuous improvement.
- Standard work.

Field study:

honesty and persistence:
Cronbach alpha test was used to calculate the validity and reliability coefficients. The table data below indicates the values of the reliability and validity coefficients for the used survey list.

Variables	stability factor	Sincerity
Effectiveness of lean management	0.85	0.94
Performance of employees at King Salman Medical City	0.91	0.96

The data of the above table indicates that the reliability and validity coefficient is acceptable, as the lowest value recorded for the reliability coefficient was (0.85) and the lowest recorded value for the reliability coefficient was (0.94). The previous results indicate the stability of the measurement tool used in this study and its statistical validity for collecting field study data.

Personal data:
Gender:

Phrase	Frequency	Percentage
Male	20	61%
Female	13	39%
Total	33	100%

It is clear from the above table that the majority of the study sample were males at a rate of 61% compared to 39% females.
Age:

Phrase	Frequency	Percentage
Less than 30 years old	2	6%
From 30 to 40	7	21%
From 40 to 50	11	33%
over 50	13	39%
Total	33	100%

It is clear from the above table that the majority of the study sample had an average age of over 50 years at a rate of 39%, then a number of them were between 40 and 50 years at a rate of 33%, while we find that 21% of them were between the ages of 30 and 40 years.
Educational level:

Phrase	Frequency	Percentage
Without BS	1	3%
Bachelor's	16	51%
Master's	13	42%
Ph.D.	3	9%
Total	33	100%

It is clear from the above table that the majority of the study sample hold a bachelor's degree by 49%, compared to 39% who hold a master's degree, and few of them hold a doctorate by 9%.
Job experience:

Phrase	Frequency	Percentage
Less than 3 years	2	6%
From 3 to 5 years	7	21%
From 5 to 10 years	20	61%
over 10 years	4	12%
Total	**33**	**100%**

It is clear from the above table that the majority of the study sample had job experience from 5 to 10 years, at a rate of 61%, and a small percentage of them had job experience from 3 to 5 years, at a rate of 21%.

Study themes:

The researcher identified three axes of lean management, which are (work site organization, continuous improvement, and standard work) in order to answer the research question. that:

S	Lean Management Pillars	SMA	Relative weight	level of significance	arrangement
1	Work site organization	4.29	85.8	0.000	2
2	continuous improvement	4.13	82.6	0.000	3
3	standard work	4.32	86.4	0.000	1
4	overall dimension	4.29	85.8	0.00	

The table above represents the degree of responses of the study sample on the dimensions of lean management in King Salman Medical City. We note that the level of significance in all the previous three domains was less than 0.01, and this confirms the existence of statistical significance for these domains, and the highest response rate was on the third dimension (standard work). The response rate was 86.4, while the response rate for the dimension (organizing the work site) came in second place, which amounted to (85.8), and the dimension (continuous improvement) ranked last with a rate of (82.6). very high responses; This confirms the effectiveness of lean management in King Salman Medical City.

The researcher will track the responses of the study sample on the paragraphs of each dimension in order to identify the most paragraphs that received a high response rate.

The first axis: the effectiveness of the application of lean management through the organization of the work site:

S	ferries	St. deviation	Mean	Arrangement
1	There is proportionality and appropriateness between the work site and the nature of work tasks.	1.057	2.48	4
2	The existence of a guide to organize the work so that it is easy to refer to the files in a sound scientific manner.	1.066	2.65	5
3	High-quality standards are followed in organizing the work site and its tools in a way that helps to complete the tasks smoothly.	1.164	2.84	3
4	The workers in the health institution are interested in arranging their workplace and files.	1.235	3.07	1
5	The administration is keen to enhance the self-discipline of the workers in the necessity of arranging files and documents to work in their places.	1.229	3.00	2

It is clear from the above table that the highest paragraph that received a high response rate among the study sample in the axis of the effectiveness of applying lean management by organizing the workplace is paragraph (4), which states the interest of workers in the health institution to arrange their workplace and files with a response rate of 88%, followed by Paragraph No. (5), which states the administration's keenness to enhance the self-discipline of employees, with a response rate of 79%. This result indicates that there is a high availability of the application of lean management among the study sample.

The second axis: the effectiveness of applying lean management through continuous improvement:

S	ferries	St. deviation	Mean	Arrangement
1	Healthcare workers see it as a shared responsibility and contribute to it	1.028	2.53	3
2	Periodic meetings are held between employees to give suggestions for improving work.	.965	2.53	4
3	Health organization workers make suggestions for continuous improvement and development.	1.028	2.51	2
4	The improvement and development of the work is done based on the suggestions of the workers.	.965	2.51	5

5	The health department works to introduce the latest technological means to improve the performance of workers' tasks.	1.167	2.76	1

It is clear from the above table that the highest paragraph that received a response score among the study sample in the axis of the effectiveness of applying lean management through continuous improvement is paragraph No. (5), which states that the health administration is keen to introduce the latest technological means to improve the performance of employees' tasks with a response rate of 97% Followed by Paragraph No. (3), which stipulates that workers in health organizations submit suggestions to management for continuous improvement and development, with a response rate of 94%. This result indicates that the application of lean management has been achieved through continuous improvement for the study sample, through the introduction of the latest technological means to improve the performance of employee tasks and the submission of suggestions by employees for continuous improvement.

The third axis: the effectiveness of the application of lean management through standard work:

S	ferries	St. deviation	Mean	Arrangement
1	There is harmony and non-divergence in following the rules and procedures established in the organization.	1.046	2.35	3
2	Employees are evaluated on the basis of results of good performance accepted in the organization.	1.046	2.35	2
3	Decisions are made with accuracy and speed in action.	.967	2.05	5
4	The health organization establishes standard operating procedures to reduce waste of resources and to ensure quality.	1.017	2.54	4
5	The health organization relies on electronic computing in its transaction processing procedures.	1.077	2.19	1

It is clear from the above table that the highest paragraph that received a response score among the study sample in the axis of the effectiveness of applying lean management through institutional work is paragraph No. (5), which states that the health organization relies on electronic computing in conducting and completing transactions, with a response rate of 97% , followed by Paragraph No. (1), which states that there is harmony and no difference in following the rules and procedures in force in the organization, at a rate of 76%. The above result indicates the effectiveness of applying lean management through institutional work among the study sample. This is shown by the health organization's reliance on electronic computing in the procedures for completing transactions, and evaluating workers on the basis of the results of good performance accepted in the organization.

Summary of findings and recommendations:

Results:

Most of the study sample are males, and their average age was over 50 years, and the majority of them hold a bachelor's degree, and their work experience ranged from 5 to 10 years.

There is a statistically significant relationship for the effectiveness of lean management in King Salman City on the performance of workers through the three dimensions (standard work, organization of the work site, and continuous improvement).

The effectiveness of the application of lean management through the organization of the workplace is through the interest of workers in the health institution to arrange their workplace and their files.

The effectiveness of the application of lean management through continuous improvement is through the keenness of the health department to introduce the latest technological means to improve the performance of the tasks of workers.

The effectiveness of applying lean management through institutional work is based on the health organization's reliance on electronic computing in conducting and completing transactions.

Recommendations:

In light of the previous results, the research recommends the following:

1. Spreading awareness of lean management as one of the modern management methods in the field of hospital management.

2. Paying attention to training to raise the efficiency and effectiveness of the staff at King Salman Medical City. These two elements are necessary for the success and competitiveness of health institutions.
3. Focusing on continuous improvement as a planned and systematic process with a system to achieve an adjustment to the level of the institution, with the aim of raising the level of performance.

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