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Challenges of Healthcare Operations Management: A Literature Review

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Abstract

This study explores healthcare operations management core challenges, a literature review was conducted by reading numerous secondary data sources, including government papers, industry reports, and scholarly literature. The findings were ten key challenges that are typically encountered by stakeholders in healthcare operations management. Those are *resource allocation, cost control, patient flow and waiting times, data management and technology integration, regulatory compliance and quality assurance, staffing and workforce management, supply chain management, patient engagement and satisfaction, emergency preparedness and disaster management, encouraging a culture of innovation and continuous improvement.* The results provide a significant contribution to the body of information already in existence by illuminating the recognized difficulties highlighting their complexities if not mitigated. The research question that this study aims to answer is ***"what is the most critical challenge faced in healthcare operations management"***, based on the outcomes of the research, the relative weight of each challenge might change depending on the particular objectives and difficulties that a healthcare organization faces. Making it critical for them to take a balanced strategy that takes these aspects' interactions into account. In hospital operations management, a holistic approach that incorporates these variables is frequently the most successful technique. Prioritizing one area above others may not result in ideal outcomes thus, no one challenge can be considered more critical than the other.

Keywords

Healthcare, Operations Management,

1. Introduction

Numerous difficulties confront healthcare operations management are frequently caused by the difficulties in providing effective, high-quality treatment while controlling expenses and resources. These are a few typical difficulties such as in order to satisfy patient needs while reducing waste and preserving quality service, healthcare institutions must *optimize the allocation of resources*, such as people, equipment, and space Yinusa and Faezipour (2023). It might be difficult to strike a balance between providing high-quality treatment and keeping costs under control. *Effective cost-control* strategies are needed due to the rising costs of healthcare, which include those for staff, equipment, and drugs Kaplan and Porter (2011). It can be difficult to control how patients move between departments, *cut down on wait times, and optimize scheduling in order to avoid bottlenecks and boost productivity Ala et al (2021).* It is critical to implement and manage electronic health records (EHRs), make sure systems are interoperable, and *use technology to boost operational effectiveness while protecting patient privacy and security* Aguirre et al (2019). Maintaining high-quality patient care while *complying with ever-changing healthcare rules* necessitates a substantial administrative workload Porter and Lee (2013). *Sourcing, educating, and keeping qualified healthcare workers* while also arranging their schedules to accommodate patient demand can be difficult, particularly in times of personnel scarcity Jaeger et al (2018). For continuous patient care, it is essential to maintain a stable supply of medications, medical equipment, and other supplies while controlling prices, quality, and inventory levels Bringoz (2023). Providing comprehensive treatment and establishing a good reputation depend on *meeting patient expectations*, fostering better communication, and raising patient satisfaction Mosadeghrad (2014). It is important for healthcare institutions to create and *execute efficient emergency response plans* in order to manage unforeseen circumstances such as natural disasters, pandemics, or major catastrophes Colling and York (2010). *Encouraging a culture of innovation and continuous improvement* can help organizations adopt new technology, adjust to shifting healthcare environments, and streamline procedures to enhance patient outcomes and operational effectiveness Stoumpos et al (2023).

In order to address these issues and enhance the healthcare delivery system as a whole, a multidisciplinary strategy combining physicians, IT professionals, operations managers, and healthcare administrators is frequently necessary. Therefore, the main research question which this research aims to answers is *"what is the most critical challenge faced in healthcare operations management"*.

1.1 Objectives

The key objectives of this research are multi-facet, first is to highlight the key challenges that are typically encountered in healthcare operations management. Second, critically evaluate based on the literature review, which challenge should be mitigated by healthcare operations management professionals to guarantee the most impact and as the key unique research contribution to this field.

2. Literature Review

In this section, each to the importance of each of the identified challenges will be explored further; giving the reader an understanding of the scale of implication if not effectively mitigated.

2.1 Resource Allocation Challenge

In healthcare operations management, *resource allocation* is critical for a number of reasons, allocating resources wisely guarantees that patients receive timely and suitable treatment. It facilitates patient flow management, shortens wait times eresource scheduler (2023), and guarantees that medical personnel and resources are accessible when needed hence *improving patient treatment* Bodina et al (2017). Personnel, infrastructure, and other resources related to healthcare are frequently scarce. Without sacrificing the standard of care, efficient allocation aids in optimizing the use of these resources, cutting waste, and managing expenses making the operator more *cost effective* Scheunemann and White (2011). By determining how best to deploy resources to address evolving patient demands and healthcare trends, it helps healthcare organizations make *strategic long-term plans*. This involves estimating the need for services and making sure the right number of resources are available Clarke et al (2017). Efficient resource allocation can lead to greater results and higher standards of care hence an *enhancement of quality*. Better patient outcomes can result, for example, by funding preventative care or certain specialized therapies Harris et al (2017). *Equitable access to healthcare services* is facilitated by the effective deployment of resources. Its goal is to lessen healthcare delivery gaps by equitably allocating resources across various demographics and geographic regions Kreng and Yang (2010).

In times of crisis or epidemic, effective resource allocation is essential. Planning for *emergency preparation* is making sure there are adequate resources on hand to deal with unforeseen circumstances or abrupt spikes in patient load European Commission (2011). Effective human resource management is a component of resource allocation. This entails training initiatives, staffing numbers, and making sure medical personnel have the tools they need to provide high-quality treatment Kabene et al (2006).

2.2 Cost Control

For a number of reasons, cost control is essential to healthcare operations management, starting from *resource optimization*, medical institutions need to make effective use of its people, equipment, and supplies. Cost control makes ensuring that these resources are used as efficiently as possible, reducing waste and raising productivity levels Thomas and Chalkidou (2016). Followed by *budget management*, tight financial constraints are a common feature of healthcare organizations. Maintaining quality patient care while adhering to these budgetary restrictions is made easier with effective cost control Homauni et al (2023). Additionally, *affordability and accessibility*, reducing expenses can help make healthcare more accessible and affordable for a wider range of people. Healthcare providers may be able to reduce the total cost of services and increase patient accessibility by controlling expenditures Snoswell et al (2020). Furthermore, the *enhancement of quality*, cutting costs does not always equate to sacrificing quality. It includes implementing best practices, simplifying procedures, and making investments in tools or systems that improve patient care. Operating efficiency is fueled by this harmony between quality enhancement and cost management Couto et al (2023). Moreover, regulatory compliance, a number of rules must be followed by healthcare activities. Adequate cost control strategies guarantee that the company manages costs while adhering to these regulations Young and Smith (2022). Lastly, *long-term viability and financial stability* of healthcare organizations are enhanced by sustainable cost management techniques. They can withstand shifts in the healthcare industry and variations in the economy thanks to it Abbas (2023).

2.3 Patient Flow and Wait Times

Patient flow and wait time reduction are essential components of healthcare operations management due to *patient satisfaction*, a protracted wait period may have a negative effect on patient satisfaction. Patients have a better overall experience when wait times are decreased through effective patient flow management. Contented patients are more likely to follow their medical regimens and refer others to the hospital Abdulsalam and Khan (2020). Additionally, due to *optimized resource utilization*, a smooth patient flow makes sure that personnel, spaces, and equipment are all used to their full potential. By optimizing, bottlenecks are lessened, production is increased, and the utilization of available resources is maximized Chen et al (2015). Furthermore, *enhanced treatment quality*, improving patient flow can have a beneficial effect on the standard of treatment provided. Patients receive prompt attention and treatment, which lowers the possibility of complications or worsening of their illness as a result of prolonged wait times Ahlin et al (2023). Also, the *financial implications*, the financial stability of healthcare institutions may be impacted by lengthy wait times. Facilities may be able to see more patients, make more money, and lower the cost per patient contact by efficiently managing patient flow Dong (2015). Moreover, compliance and efficiency, reaching operational efficiency targets and complying with regulations is facilitated by an effective patient flow. It guarantees that patients are seen in accordance with set healthcare criteria and within reasonable time constraints Beauchemin et al (2019). *Emergency Readiness* as well during crises or spikes in the number of patients, efficient patient flow management is essential. It enables medical institutions to adjust to growing patient demand without sacrificing the standard of service Rosenback and Svensson (2023). Lastly, *optimizing scheduling*, cutting out pointless stages in procedures, integrating technology to facilitate more efficient workflows, and continuously assessing and improving systems to maximize efficiency are all important to improve patient flow. It's a crucial component of managing healthcare operations that has an immediate influence on patient satisfaction and the general running of medical facilities Ala et al (2021).

2.4 Data Management and Technology Integration

For healthcare operations management, technological integration and data management are vital for a number of reasons such as *efficiency and accuracy*. Quick access to correct patient information is made possible by the efficient data management solutions that optimize workflows. This enhances patient care generally as well as diagnosis and treatment Paul et al (2023). Secondly, *making decisions*, integrated technology offers thorough data analytics, which helps administrators and medical experts make well-informed decisions. It supports trend detection, epidemic prediction, and resource allocation optimization Cynotech Technology Solution (2023). Thirdly, *patient engagement*, through portals and applications, integrated systems provide improved patient engagement by enabling people to readily access their medical information, make appointments, and get in touch with their healthcare professionals

Irizarry et al (2015). Fourthly, *cost savings*, medical mistakes, administrative expenses, and redundancies are all decreased by effective data management and integration. It can also assist in determining treatments that are cost-effective and in effectively managing inventories Al-Jaroodi et al (2020). Fifthly, *regulatory compliance*, by guaranteeing safe data transfer and storage, integrated systems assist in upholding compliance with standards like HIPAA (Health Insurance Portability and Accountability Act), which are constantly changing in the healthcare industry Fadlalla and Wickramasinghe (2004). Lastly, *interoperability*, coordinating efforts and maintaining continuity of care are facilitated by seamless integration, which enables information sharing and communication between disparate systems in different departments or healthcare institutions Torab-Miandoab et al (2023).

2.5 Regulatory Compliance and Quality Assurance

In healthcare operations management, regulatory compliance and quality assurance are crucial for a number of reasons. Firstly, *patient safety*, adherence to rules and guidelines that minimize medical mistakes, guarantee appropriate handling of private data, and uphold hygienic and sanitation standards all contribute to patient safety Rodziewicz et al (2023). Secondly, *legal obligations*, in order to stay out of trouble with the law, healthcare institutions are required to abide by a number of rules and laws. Maintaining compliance means that the company stays inside the lines drawn by HIPAA, FDA, CDC, and other regulatory agencies Qin (2020). Thirdly, *reputation and trust*, healthcare organizations' reputations are strengthened when they uphold strict adherence to regulations and high standards of quality. Patients are more inclined to select and trust institutions that have a reputation for following rules and providing high-quality care Ambrosio (2020). Fourthly, *risk mitigation*, by lowering possible liabilities and financial risks, compliance and quality assurance programs assist reduce risks related to malpractice, data breaches, and subpar patient care McDavid and Bowen (2012). Fifthly, *continual improvement*, continuous evaluation and improvement programs are frequently a part of quality assurance procedures. This iterative process aids in pinpointing areas where overall performance, operational effectiveness, and patient care may be improved ASQ (2023). Lastly, *Insurance and financing*, accreditation or financing from public or private organizations, as well as insurance coverage, are sometimes contingent upon adherence to rules and quality standards McGeary (1990).

2.6 Staff and Workforce Management

For a number of reasons, staff and workforce management is crucial to hospital operations management. Starting from *patient care*, the quality of patient care is directly impacted by competent and well-managed healthcare personnel. Precise scheduling, proper training, and a sufficient number of employees guarantee that patients receive prompt, high-quality service Hannawa et al (2022). Secondly, *operational efficiency*, well-managed staff streamlines processes, cuts down on wait times, and raises the standard of treatment provided. Effective patient load management is aided by resource allocation and scheduling that are appropriate Sun et al (2017). Thirdly, *cost control*, one way to keep labor expenses under control is through effective workforce management. The financial health of a healthcare institution may be considerably impacted by managing personnel numbers to correspond with patient demand and making efficient use of available resources Humphreys et al (2022). Fourthly, *employee satisfaction*, good management creates a happy workplace, which increases job satisfaction and keeps employees on board. Content employees are more inclined to give greater care and make valuable contributions to the company Hasan et al (2021). Fifthly, *compliance and training*, managing the workforce entails making sure that rules are followed and giving employees regular training to keep them informed about the newest procedures and technological advancements. This is essential for upholding regulatory obligations and sustaining quality standards CIPD (2023). Lastly, *adaptability and resilience*, personnel under good management are able to adjust to changing conditions, such as unexpected spikes in the number of patients during pandemics or catastrophes. Healthcare systems that are more robust are made possible by effective staff management Agostini (2023).

2.7 Supply Chain Management

Supply chain management is crucial to hospital operations management due to the need for *medical supply availability*, effective supply chain management guarantees that necessary medical supplies, prescription drugs, and equipment are available when needed. In order to continue providing patients with treatment, this is essential Kwon et al (2016). Secondly, *cost efficiency*, cutting expenses related to distribution, procurement, and inventory management is made possible by supply chain optimization. This ultimately helps healthcare facilities save money overall Leaven et al (2017). Thirdly, *safety and quality*, keeping a strong supply chain guarantees the safety and quality of medical supplies. Following the right procedures for handling, storing, and shipping must be followed in order to keep materials from becoming contaminated or degraded Gaur and Gaiha (2020). Fourthly, *emergency preparedness*, whereby in times of crisis or epidemic, a well-managed supply chain is crucial. It makes it possible for vital supplies to be distributed

properly, allowing healthcare institutions to successfully handle rising demand Okeagu et al (2021). Fifthly, *regulatory compliance*, in the healthcare supply chain, adherence to legal requirements, such as FDA rules, is essential. This entails following safety and labeling regulations, verifying authenticity, and tracking and tracing items Infosys (2018). Sixthly, *innovation and technology integration*, technological developments such as blockchain and RFID tagging can improve the transparency and traceability of the supply chain. The supply chain may operate more efficiently and with fewer mistakes if these technologies are integrated Varriale et al (2021). Lastly, *sustainability*, efforts to promote sustainability are aided by ethical supply chain management. This entails cutting waste, planning the best possible routes for transportation, and selecting goods and packaging that are kind to the environment Villena and Gioia (2020).

2.8 Patient Engagement and Satisfaction

Patient happiness and engagement are essential to healthcare operations management due to *healthcare quality*, patients who are actively involved in their treatment plans are more likely to adhere to them, which improves their health. Patient satisfaction frequently denotes a favorable experience, which may be related to the caliber of treatment given Crow et al (2002). Secondly, *patient-centered care*, a patient-centered approach that customizes healthcare services to each patient's needs and preferences is encouraged by a focus on patient participation. This improves the general satisfaction and experience of the patient Edgman-Levitan and Schoenbaum (2021). Thirdly, *healthcare utilization*, patients who are happy and engaged are more likely to visit the doctor on a frequent basis. This helps to identify health problems early on and receive preventative care, which lowers the risk of serious diseases and hospital stays The National Academic Press (2018). Fourthly, *brand loyalty and reputation*, satisfied patients are more likely to refer the institution to others and return for other medical needs. For healthcare companies, positive experiences help to establish a solid reputation and foster brand loyalty Liu et al (2021). Fifthly, *operational efficiency*, processes may be streamlined to reduce administrative hassles and improve operational efficiency. Examples of these methods and tools include telehealth services Siwicki (2022) and online portals for appointments Geyer (2015). Sixthly, *feedback and improvement*, patient input is crucial to the ongoing development of healthcare offerings. Improvements in operations and service delivery may result by including patients and responding to their issues or recommendations University of Southampton (2020). Lastly, *metrics related to patient satisfaction* are becoming more and more important in gauging regulatory compliance and payment schemes. Funding and reimbursements may be positively impacted by high patient satisfaction ratings Prakash (2010).

2.9 Emergency Preparedness and Disaster Management

Disaster management and emergency preparedness are essential components of healthcare operations management because of *maintaining continuity of treatment*, in order to guarantee that patients get treatment continuously, even in times of emergency, healthcare institutions need to be prepared to deal with unforeseen circumstances. Plans for disaster management that work effectively reduce interruptions and preserve vital services Drummond and O'Rourke (2019). Secondly, *patient safety and health*, the most important thing to consider in an emergency is patient safety. By preventing harm to patients, employees, and the community, preparedness measures enable healthcare institutions to provide effective and efficient medical treatment WHO (2023). Thirdly, *resource allocation*, disaster management planning entails the distribution of resources, such as infrastructure, manpower, and medical supplies. Effective resource allocation helps avoid shortages during emergencies and guarantees that vital resources are available when required Doan and Shaw (2018). Fourthly, *effective coordination and communication* between emergency responders, government agencies, healthcare professionals, and the community are critical during times of crisis. Plans for preparation set up the channels of communication, teamwork, and information exchange that are essential to a coordinated reaction Khirekar et al (2023). Fifthly, *risk mitigation and response planning*, identifying possible hazards and creating plans to reduce them are key components of healthcare operations management. Plans for disaster management provide a framework for many situations, enabling healthcare institutions to react to emergencies quickly and efficiently McGowan et al (2023). Sixthly, *preserving public confidence*, the public's confidence is maintained when healthcare institutions are able to handle crises with efficiency. Healthcare institutions may better serve the community and improve their reputation by being ready for emergencies and displaying skill in handling them Cohen et al (2019). Lastly, *legal and regulatory compliance*, having strong emergency preparedness and catastrophe management strategies in place is frequently necessary in order to comply with regulatory regulations and standards. In order for healthcare companies to function within legal frameworks, compliance with these criteria is essential Young and Smith (2023).

2.10 Encouraging a culture of innovation and continuous improvement

It is imperative that hospital operations management foster a culture of innovation and continual improvement to ensure *improved patient care*, innovation can result in the creation of fresh methods, tools, and procedures that enhance patients' experiences and results. Ensuring that healthcare services adapt to changing patient requirements is made possible via continuous improvement Flessa and Huebner (2021). Secondly, *efficiency and cost savings*, by simplifying procedures, cutting waste, and improving resource usage, innovation frequently promotes efficiency. As a result, healthcare organizations may see cost savings, increasing the accessibility and affordability of high-quality care Amjad et al (2023). Thirdly, *adaptation to change*, as a result of changing patient demographics, legislation, and technological breakthroughs, the healthcare industry is always changing. Healthcare operations may more easily adjust to these changes and remain competitive in a changing environment when they have an innovative culture Nilsen et al (2020). Fourthly, *employee satisfaction and engagement* whereby promoting innovation gives staff members the freedom to provide suggestions and solutions. Healthcare workers who are involved in this process have greater job satisfaction and retention rates because it cultivates a sense of ownership and participation Moloney et al (2020). Fifthly, *risk mitigation and quality improvement*, healthcare businesses may more effectively identify and reduce risks by utilizing continuous improvement techniques. Better quality control and a proactive strategy to prevent mistakes or unfavorable occurrences result from this Paz et al (2023). Sixthly, *competitive advantage*, healthcare operators that welcome innovation and ongoing development frequently have an advantage over their rivals. They may draw in clients, elite personnel, and collaborations by demonstrating their dedication to provide state-of-the-art medical treatment Elrod and Fortenberry (2018). Lastly, *data-driven decision-making*, using technology and data analytics to innovate healthcare operations is a common practice. This makes it possible to make decisions based on facts, optimize treatments, allocate resources, and run operations more efficiently overall Tulane University (2022).

3. Methods

A systematic-narrative hybrid literature review is used to examine the body of current literature, and covers a wider scope and offers a narrative synthesis of the literature on a certain topic without adhering to a rigid, predetermined approach. Depending on secondary sources from a variety of academic databases, were referencing sources identified throughout the literature review. The authors provided a detailed summary and discussion of the literature, emphasizing themes, important details, and professional viewpoints. Following this literature review methodology, a descriptive summary of the literature and debating ideas, patterns, and points of contention. It is useful for giving the readers a broad understanding of the subject ‘challenges in healthcare operations management’, investigating different points of view, and providing methodically analyzed information and insights based on a variety of sources Turnbull et al (2023).

4. Data Collection

To compile pertinent data on healthcare operations management challenges and mitigations deployed across the globe, the authors leveraged the Journal Finder via the American University of Sharjah (AUS) Library platform and multiple databases such as ProQuest Central, Scopus, Google Scholar and IEEE Explore using a combination of phrases bound to the main topic such as “healthcare operations management”, “challenges in healthcare operations management”, “mitigation of healthcare operations management challenges”. English sources of empirical studies, academic book sections, literature reviews, conference proceedings, conceptual papers, editorials were considered where feasible. All identified sources were independently reviewed by the main author and examined those sources that were fully aligned with the scope of this review. Given the topic is a key industry trend topic, it was essential that the search radius be expended to reliable industry sources, think tank reports, and official newspapers which capture the insights of subject matter experts and yielded supplementary sources from reliable sources and industry insights. A thematic analysis method was employed to examine the data collected; based on the main themes that emerged, the data acquired from the literature research was thoroughly examined and categorized Braun and Clarke (2021).

5. Results and Discussion

Every one of the identified elements in this research are vital to the administration of healthcare operations, but which is most critical will vary depending on the goals and conditions in a given healthcare system. *Resource Allocation* is essential to manage personnel, supplies, and money well. It guarantees efficient operations, prompt treatment, and best use of the resources at hand Digital McKinsey (2017). *Enhancing Patient Care*, providing patient care is the main objective of healthcare. It is essential to concentrate on enhancing patient outcomes, experiences, and treatments. Patient-centered care and evidence-based procedures fall under this category Engle et al (2021). *Cost-effectiveness*, around the world, healthcare expenses are a major source of worry. Maintaining sustainability and guaranteeing access

for everyone depend on finding a balance between the cost and quality of treatment Cylus et al (2016). *Strategic long-term plans*, it is important to plan ahead and anticipate changes in healthcare requirements, technology, and population. Development and resource distribution are governed by long-term strategies Huebner and Flessa (2022). *Improvement of quality*, to guarantee that patients receive safe, efficient, timely, equitable care, quality assurance and improvement programs are essential Hughes (2008). *Equitable Access to Medical Services*: having access to medical care is a basic human right. Public health requires addressing access gaps brought on by social, economic, or geographic reasons Riley (2012). *Emergency planning*, in order to react quickly and effectively to any type of emergency, including pandemics and natural catastrophes, healthcare systems must be ready Colling and York (2010).

The following Figure 1 and Table 1 summarize the ten main challenges literature outlined in healthcare operations management and demonstrates how if managed effectively and efficiently, the numerous positive outcomes that are attained by the patient and the healthcare operator.

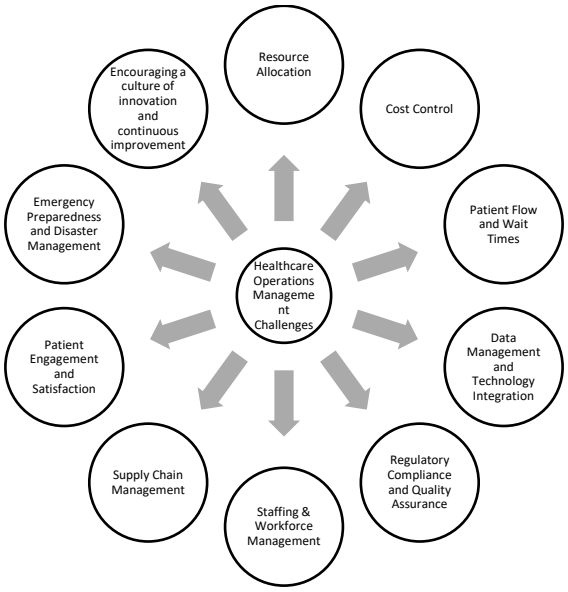

Figure 1. Healthcare Operations Management Challenges (2023) (Source: Author)

Table 1. Positive Outcome of efficiently and effectively managing healthcare operations management challenges

Healthcare Operations Management Challenges	**Positive outcome of efficiently and effectively managing the challenges**	**References**
Resource Allocation	Patients receive timely and suitable treatment	eresource scheduler (2023)
	Facilitates patient flow management	
	Shortens waiting times	
	Improves patient treatment	Bodina et al (2017)
	Optimizes the use of resources	
	Cuts waste	
	Manages expenses for more cost effectiveness	Scheunemann and White (2011)
	Allows for strategic long-term plans	Clarke et al (2017)
	Enhancement of quality	Harris et al (2017)
	Better patient outcomes	
	Equitable access to healthcare services	Kreng and Yang (2010)
	Better emergency preparation	European Commission (2011)

	Effective human resource management	Kabene et al (2006)
Healthcare Operations Management Challenges	Positive outcome of efficiently and effectively managing the challenges	References
Cost Control	More resource optimization (people, equipment and supplies)	Thomas and Chalkidou (2016)
	Reduces waste	
	Raises productivity level	
	Better budget management	Homauni et al (2023)
	More affordability and accessibility	Snoswell et al (2020)
	Enhancement of quality	Couto et al (2023)
	Simplification of procedures	
	Improves patient care	
	Better regulatory compliance	Young and Smith (2022)
	Long-term viability and financial stability	Abbas (2023)
Patient Flow and Wait Times	More patient satisfaction and a better overall experience	Abdulsalam and Khan (2020)
	Effective patient flow management	
	Patients follow more their medical regimens	
	Patients refer others to the hospital	
	Optimized resource utilization	Chen et al (2015)
	Bottlenecks are lessened	
	Production is increased	
	Enhanced treatment quality	Ahlin et al (2023)
	Improving patient flow	
	Lowers the possibility of complications or worsening of patient's illness	
	Lowers the cost per patient contact (financial implications)	Dong (2015)
	More compliance and efficiency	Beauchemin et al (2019)
	Better emergency Readiness	Rosenback and Svensson (2023)
	Optimizing scheduling	Ala et al (2021)
Data Management and Technology Integration	More levels of efficiency and accuracy	Paul et al (2023)
	Quick access to correct patient information	
	Enhances patient care	
	Enhances diagnosis and treatment	
	Helps administrators make well-informed decisions	Cynotech Technology Solution (2023)
	Supports trend detection	
	Supports epidemic prediction	
	Resource allocation optimization	
	Improved patient engagement	Irizarry et al (2015)
	Cost savings	Al-Jaroodi et al (2020)
	Decreases medical mistakes	
	Decreases administrative expenses	
	Decreases redundancies	
	More regulatory compliance	Fadlalla and Wickramasinghe (2004)
	More interoperability	Torab-Miandoab et al (2023)

Healthcare Operations Management Challenges	Positive outcome of efficiently and effectively managing the challenges	References
Regulatory Compliance and Quality Assurance	More levels of patient safety	Rodziewicz et al (2023)
	Minimizes medical mistakes	
	Guarantees appropriate handling of private data	
	More abidance to legal obligations	**Qin (2020)**
	Higher levels of reputation and trust	Ambrosio (2020)
	High standards of quality	
	Better risk mitigation	McDavid and Bowen (2012)
	Reduces risks related to malpractice, data breaches, and subpar patient care	
	Continual improvement	ASQ (2023)
	Better insurance and financing	McGeary (1990)
Staff and Workforce Management	Enhanced high-quality patient care	Hannawa et al (2022)
	Operational efficiency	Sun et al (2017)
	Cuts down on wait times	
	More cost control	Humphreys et al (2022)
	Higher levels of employee satisfaction	Hasan et al (2021)
	Higher retention rates	
	Upholding regulatory obligations	CIPD (2023)
	Sustaining quality standards	
	More adaptability and resilience	Agostini (2023)
	More robust health systems	
Supply Chain Management	Medical supply availability	Kwon et al (2016)
	More cost efficiency	Leaven et al (2017)
	More safety and quality	Gaur and Gaiha (2020)
	Better emergency preparedness	Okeagu et al (2021)
	More regulatory compliance	Infosys (2018)
	Better transparency and traceability of supply chain	Varriale et al (2021)
	More innovation and technology	
	Promotes more sustainability	Villena and Gioia (2020)
Patient Engagement and Satisfaction	Improves healthcare quality	Crow et al (2002)
	More favorable patient experience	
	More patient-centered care	Edgman-Levitan and Schoenbaum (2021)
	More healthcare service utilization	The National Academic Press (2018)
	Enhanced brand loyalty and reputation	Liu et al (2021)
	Improves operational efficiency	Siwicki (2022), Geyer (2015)
	Reduces administrative hassles	
	Better feedback	University of Southampton (2020)
	Better improvements in operations and service delivery	
	Positive funding and reimbursements	Prakash (2010)
	Higher patient satisfaction ratings	

Healthcare Operations Management Challenges	Positive outcome of efficiently and effectively managing the challenges	References
Emergency Preparedness and Disaster Management	Maintaining continuity of treatment even in times of emergency	Drummond and O'Rourke (2019)
	Reduces interruptions and preserve vital services	
	More levels of patient safety and health	WHO (2023)
	Provides effective and efficient medical treatment	
	More effective resource allocation	Doan and Shaw (2018)
	More effective coordination and communication	Khirekar et al (2023)
	Better risk mitigation and response planning	McGowan et al (2023)
	Preserving public confidence	Cohen et al (2019)
	More legal and regulatory compliance	Young and Smith (2023)
Encouraging a culture of innovation and continuous improvement	Improved patient care	Flessa and Huebner (2021)
	More efficiency and cost savings	Amjad et al (2023)
	Better adaptation to change	Nilsen et al (2020)
	Higher levels of employee satisfaction and engagement	Moloney et al (2020)
	Robust risk mitigation	Paz et al (2023)
	Enhanced quality improvement	
	More competitive advantage	Elrod and Fortenberry (2018)
	Precise data-driven decision-making	Tulane University (2022)

The relative weight of each challenge might change depending on the particular objectives and difficulties that a healthcare organization faces. For example, cost-effectiveness and equitable access may be more important in a situation where resources are limited. On the other hand, a technologically sophisticated hospital may place more emphasis on long-term planning and quality improvement in order to remain at the forefront of medical innovation. In the end, it is critical to take a balanced strategy that takes these aspects' interactions into account. In hospital operations management, a holistic approach that incorporates these variables is frequently the most successful technique. Prioritizing one area above others may not result in ideal outcomes.

6. Conclusion

In general, healthcare operations management resource allocation involves making well-informed choices to maximize resources, enhance patient care, keep costs under control, and adjust to evolving healthcare requirements Yip and Hafez (2015). Effective cost control, in general, involves strategic resource management to preserve quality treatment, enhance patient outcomes, and safeguard the financial stability of healthcare operations. It is not only about slashing costs Kohn et al (2000). The core of contemporary healthcare operations is, in essence, data management and technological integration. They enable better patient outcomes, cost effectiveness, operational efficiency, and regulatory compliance Junaid et al (2022). Labor and personnel management are essential to the efficient operation of healthcare facilities. They have an immediate effect on patient care, financial stability, operational effectiveness, and the general standard of healthcare services Kabene et al (2006). Supply chain management is essential to the administration of healthcare operations. In healthcare institutions, it affects patient care, cost effectiveness, supply quality and safety, emergency preparedness, compliance, innovation, and sustainability APU (2023). Patient satisfaction and engagement have a big influence on healthcare operations management. They have an impact on healthcare businesses' financial standing as well as the standard of care provided, patient outcomes, service use, brand reputation, operational effectiveness, and continuous improvement Manzoor et al (2019). Essentially, incorporating disaster recovery and emergency preparation into healthcare operations management guarantees a proactive approach to managing emergencies, protecting patients and personnel, sustaining critical services, and enhancing the general resilience of healthcare systems Ravaghi et al (2022). All things considered, promoting an innovative and continuous improvement culture within healthcare operations management is critical to bringing about good change, enhancing patient outcomes, making the most use of available resources, and staying up to date with the rapidly changing

landscape of healthcare delivery Kelly (2017). To summarize, the cornerstones of healthcare operations management are quality assurance and regulatory compliance. They maintain patient safety, fulfill regulatory requirements, boost reputation, reduce risks, encourage ongoing development, and guarantee financial stability. Based on the outcome of this literature review, and as an answer to the research question *"what is the most critical challenge faced in healthcare operations management"* no one challenge can be considered more critical than the other.

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