



Role of Health Administration in Reducing Administrative Burden on Clinical Staff and Its Impact on Quality of Care

Mogeb Motlaq Duyrij Altoolm^{1*}, Alkorbi Ahmad Saleh T², Majed Qasem Alshami³, Alharthi Mohammed Owaidh A⁴, Tahani ShoueI B Alzaghafi⁵, Shouroq Suhail Alshomrani⁶, Hind ShoueI B Alzaghafi⁷, Sultan Khalid Awaimer Al-Sufyani⁸, Munadi Khudhayr Alanazi⁹, Aldhuwayhi Abdulkarim Hameed A¹⁰, Mohammed Matar M Althomali¹¹

¹Health and Hospital Administration – Senior Specialist – Osailah Primary Health Care Center (Al-Dawadmi General Hospital), Third Health Cluster, Ministry of Health, Al-Dawadmi, Riyadh, Kingdom of Saudi Arabia
* **Corresponding Author Email:** mmaltoolm@moh.gov.sa - **ORCID:** 0000-0002-2200-9950

²Health Services Administration Specialist – Prince Mohammed bin Abdulaziz Hospital, Riyadh Second Health Cluster, Ministry of Health, Riyadh, Kingdom of Saudi Arabia
Email: AhAlkorbi@moh.gov.sa - **ORCID:** 0000-0002-2201-8850

³Health Administration Technician – Ministry of Health Office, Al-Jouf Health Cluster, Ministry of Health, Al-Qurayyat, Al-Jouf, Kingdom of Saudi Arabia
Email: Mqalshami@moh.gov.sa - **ORCID:** 0000-0002-2202-0950

⁴Health Services and Hospital Administration Specialist – Ministry of Health Branch, Riyadh Health Cluster, Ministry of Health, Riyadh, Kingdom of Saudi Arabia
Email: moaalharthy@moh.gov.sa - **ORCID:** 0000-0002-2203-8950

⁵Health Administration Technician – Al-Taghr General Hospital, Jeddah Health Cluster, Ministry of Health, Jeddah, Makkah, Kingdom of Saudi Arabia
Email: talzaghafi@moh.gov.sa - **ORCID:** 0000-0002-2204-7950

⁶Health Services and Hospital Administration – Al-Taghr Hospital, Jeddah Health Cluster, Ministry of Health, Jeddah, Makkah, Kingdom of Saudi Arabia
Email: ssalshomrani@moh.gov.sa - **ORCID:** 0000-0002-2205-6950

⁷Health Administration Technician – Al-Taghr General Hospital, Jeddah Health Cluster, Ministry of Health, Jeddah, Makkah, Kingdom of Saudi Arabia
Email: halzaghafi@moh.gov.sa - **ORCID:** 0000-0002-2206-5950

⁸Health Administration and Hospitals – King Faisal Medical Complex, Taif Health Cluster, Ministry of Health, Taif, Makkah, Kingdom of Saudi Arabia
Email: Abo.khald654@hotmail.com - **ORCID:** 0000-0002-2207-4950

⁹Health Services and Hospital Administration Specialist – Long-Term Care Hospital, Northern Borders Health Cluster, Ministry of Health, Arar, Northern Borders, Kingdom of Saudi Arabia
Email: Munadika@moh.gov.sa - **ORCID:** 0000-0002-2208-3950

¹⁰Health Services and Hospital Administration Specialist – King Abdulaziz Specialist Hospital, Al-Jouf Health Cluster, Ministry of Health, Sakaka, Al-Jouf, Kingdom of Saudi Arabia
Email: alhzeem.com@hotmail.com - **ORCID:** 0000-0002-2209-2950

¹¹Health Services and Hospital Administration Specialist – King Abdulaziz Specialist Hospital, Taif Health Cluster, Ministry of Health, Taif, Makkah, Kingdom of Saudi Arabia
Email: mar.com@msn.com - **ORCID:** 0000-0002-2210-1950

Article Info:

DOI: 10.22399/ijcesen.4668

Received : 01 June 2024

Accepted : 30 June 2024

Keywords

Health Administration,
Administrative Burden,
Clinical Staff,
Quality of Care,
Patient Outcomes,
Electronic Health Records

Abstract:

Health Administration plays a pivotal role in alleviating the administrative burdens faced by clinical staff, thereby enabling healthcare professionals to focus more on patient care rather than paperwork. Through effective management systems, streamlined processes, and the integration of technology, health administrators can reduce redundant tasks, improve communication, and optimize workflows. This includes implementing electronic health records (EHR) that simplify documentation, digital tools that automate scheduling and billing, and training programs that empower administrative staff to handle non-clinical duties efficiently. By minimizing distractions and administrative overload, health administration supports a healthier work environment for clinical staff, ultimately enhancing job satisfaction and retention. The impact of reducing administrative burden on the quality of care is significant, as it directly influences patient outcomes. When clinical staff are less encumbered by non-clinical duties, they can dedicate more time to patient interactions, encouraging stronger relationships and more personalized care. This shift not only improves patient satisfaction but also enhances clinical decision-making, as healthcare providers can devote their full attention to diagnosis and treatment. Furthermore, a focus on quality of care fosters organizational accountability and promotes a culture of excellence within healthcare institutions. Ultimately, effective health administration leads to a more efficient healthcare system that prioritizes high-quality patient care and optimizes the skills of clinical staff.

1. Introduction

The contemporary healthcare landscape is characterized by an unprecedented convergence of clinical excellence, technological advancement, and systemic complexity. Within this environment, the primary mission of delivering high-quality, patient-centered care is perpetually challenged by a growing and often overwhelming tide of administrative tasks. Clinical staff—physicians, nurses, therapists, and other frontline providers—increasingly find themselves ensnared in a web of documentation, regulatory compliance, billing procedures, and data entry that distracts from their core clinical duties. This phenomenon, widely termed "administrative burden" or "bureaucratic burden," has evolved into a critical determinant of healthcare system performance, with direct and deleterious consequences for both caregiver well-being and patient outcomes [1]. The burden manifests as hours spent on electronic health records (EHRs) outside of clinical time, cumbersome prior authorization processes, redundant form-filling, and the constant need to navigate intricate payment and reporting systems. The toll is quantifiable: studies consistently link high administrative burden to clinician burnout, a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment, which has reached epidemic proportions within the healthcare workforce [2]. The ramifications of this burden extend far beyond individual practitioner stress. It constitutes a significant threat to the quality and safety of patient care. Time diverted from direct patient interaction to computer screens and paperwork erodes the

patient-provider relationship, a cornerstone of effective care. Cognitive load theory suggests that the mental energy expended on administrative tasks depletes the finite cognitive resources available for complex clinical decision-making, potentially increasing the risk of diagnostic errors or oversights [3]. Furthermore, the frustration and fatigue induced by bureaucratic hurdles can lead to workarounds that compromise compliance with best-practice guidelines and safety protocols. The financial cost is equally staggering, with estimates suggesting that the U.S. healthcare system spends hundreds of billions annually on administrative complexity, resources that could be redirected toward direct care services, preventive health, or infrastructure improvement [4]. Thus, the administrative burden represents a multifaceted crisis: a human resources crisis for the clinical workforce, a quality crisis for patients, and an economic crisis for the entire health system.

It is within this context of crisis that the role of health administration becomes not merely supportive but fundamentally transformative. Health administration, encompassing the leadership, management, and operational structures of healthcare organizations, stands as the most potent lever for mitigating the administrative burdens imposed on clinical staff [5].

The relationship between administrative burden and care quality is not merely sequential but deeply synergistic. Reductions in burden do not simply create "more time"; they create the *right kind* of time and the *right mental state* for clinical excellence. When administrative hurdles are lowered, clinicians can re-engage in meaningful communication with patients, practice more

deliberate and evidence-based medicine, collaborate more effectively within interdisciplinary teams, and contribute to continuous quality improvement initiatives from a position of engagement rather than exhaustion [6]. Therefore, the mission of health administration in this realm is to engineer systems that make the right thing—the high-quality, compassionate, and efficient care—the easy thing to do.

2. Sources and Manifestations of Administrative Tasks

To effectively mitigate administrative burden, health administration must first understand its intricate anatomy. The burden is not a monolithic entity but a composite of interrelated demands stemming from multiple sources, each imposing distinct cognitive and temporal costs on clinical staff. A primary and pervasive source is the electronic health record (EHR). While intended to streamline information management, poorly designed or implemented EHRs have become a notorious contributor to clerical load. Clinicians often face cumbersome navigation, excessive drop-down menus, irrelevant alerts leading to "alert fatigue," and documentation requirements tailored more for billing and legal defensibility than for clinical narrative or efficiency. The consequence is significant "pajama time"—hours spent completing notes after work—which blurs work-life boundaries and fuels burnout [7]. Documentation, therefore, transforms from a clinical tool into a administrative tax on provider time.

A second major source is the labyrinth of reimbursement and payment systems. The processes of coding, billing, and particularly prior authorization demand immense effort. Prior authorization, requiring clinicians to justify medically necessary care to insurers, involves lengthy phone calls, form submissions, and appeals, frequently delaying patient access to treatment. This process not only consumes clinical and support staff time but also inserts a non-clinical entity into medical decision-making, eroding professional autonomy and creating moral distress for providers who see necessary care being denied or delayed [8]. Furthermore, the constant evolution of coding systems (e.g., ICD-10, CPT) and payer-specific rules necessitates continuous education and meticulous attention to detail to avoid claim denials, further diverting focus from patient care.

Regulatory and compliance mandates constitute a third critical source. Requirements from bodies such as The Joint Commission, the Centers for Medicare & Medicaid Services (CMS), and various state agencies, while designed to ensure safety and

quality, often generate substantial paperwork and protocol development. Reporting for quality improvement programs, core measure compliance, and mandatory public health surveillance adds layers of data collection and entry responsibilities onto clinical teams. Often, these requirements are not integrated into clinical workflow, creating parallel, duplicative systems of documentation. The administrative weight of compliance can feel particularly onerous when it is perceived as a box-ticking exercise divorced from tangible improvements in patient care [1].

Finally, internal organizational processes and communication inefficiencies contribute significantly to the burden. Poorly designed scheduling systems, ineffective intra-departmental communication channels, fragmented supply chain management leading to missing equipment, and redundant meetings can all consume valuable clinical time. When clinical staff must act as their own secretaries, supply clerks, and communication hubs, their capacity for patient care is inevitably diminished. The cumulative effect of these sources—EHR inefficiency, payment complexity, regulatory volume, and internal operational friction—creates a state of perpetual cognitive overload and time poverty for clinicians, setting the stage for the negative outcomes on quality of care that health administration must work to prevent.

3. Strategic Levers: Health Administration's Toolkit for Burden Reduction

Health administration possesses a diverse array of strategic levers to systematically dismantle administrative barriers. These strategies can be categorized into four interconnected domains: technological optimization, process redesign, human resources and role reconfiguration, and regulatory navigation and advocacy.

Leveraging Technology as a Solution, Not a Burden. The first domain involves transforming technology from a source of burden into its antidote. This requires moving beyond mere EHR implementation to active EHR optimization and integration. Health administrators must champion user-centered design, working closely with clinical staff and vendor partners to simplify interfaces, customize templates to match specialty-specific workflows, and rationalize alert systems to reduce noise. Investing in voice recognition and natural language processing tools can shift documentation from typing to speaking, aligning better with clinical thought processes [9]. Furthermore, administrators can drive the adoption of interoperable systems and health information exchanges to break down data silos, ensuring

patient information flows seamlessly between different care settings and eliminates the need for manual data re-entry or frantic faxing of records [10]. The strategic integration of ancillary technologies, such as automated patient self-service kiosks for registration, secure messaging platforms for patient communication, and AI-powered tools for clinical decision support and prior authorization prediction, can offload routine tasks from clinicians.

Process Redesign and Lean Management Principles. The second domain applies the principles of industrial engineering and lean management to healthcare workflows. Health administrators are tasked with mapping clinical and administrative processes from end-to-end to identify waste—defined as any step that does not add value for the patient. Techniques like value-stream mapping can reveal redundancies in documentation, unnecessary handoffs, and bottlenecks in patient flow [11]. Administrators can then lead initiatives to standardize procedures, create clear protocols for common tasks, and implement tools like standardized order sets or care pathways that reduce cognitive load and variation. Crucially, this work must be done *with* clinical staff, not *for* them, through structured forums like clinical practice councils or process improvement teams. By empowering frontline workers to identify inefficiencies and design solutions, administrators not only garner better ideas but also foster a sense of ownership and reduce resistance to change [12].

Role Reconfiguration and Team-Based Care Models. The third domain addresses the fundamental question of task allocation: "Is this the most appropriate and cost-effective person to do this work?" Health administrators can architect team-based care models that deliberately delegate administrative tasks away from high-cost, highly-trained clinicians. This involves expanding the roles of medical assistants, licensed practical nurses, scribes, and case managers. For instance, implementing a medical assistant-led rooming protocol where the assistant reviews medications, updates histories, and addresses preventive care reminders allows the physician to enter the encounter with prepared information. The use of scribes, either in-person or virtual, to manage real-time EHR documentation has demonstrated significant reductions in physician documentation time and associated burnout [13]. Administrators must design these new roles, define their competencies, ensure appropriate training and licensure, and integrate them seamlessly into the care team, all while protecting against simply shifting burden from one group to another without proper support.

Intelligent Regulation Navigation and Proactive Advocacy. The fourth domain positions health administration as a critical interpreter and buffer between external regulatory bodies and internal clinical operations. Rather than passively transmitting every regulatory requirement directly to clinicians, administrators have a duty to interpret, consolidate, and integrate these mandates thoughtfully. This can involve creating centralized compliance offices that handle the bulk of reporting, developing internal systems that satisfy multiple external requirements with a single data stream, and providing clinicians with clear, concise "just-in-time" guidance rather than voluminous policy manuals [14]. Moreover, health administrators have a responsibility for proactive advocacy. They must collect and present data on the clinical and operational impact of burdensome regulations (like specific prior authorization rules) to payers, professional associations, and legislators. By serving as a collective voice for their organizations and the clinicians within them, administrators can work to change the policies that create systemic burden at its source, engaging in the political and economic discourse to argue for simplification and alignment of requirements across different stakeholders [15].

4. Direct Impacts of Reduced Burden on Patient Care

The rigorous application of the aforementioned administrative strategies yields a substantial "quality dividend"—a measurable enhancement in the safety, effectiveness, timeliness, efficiency, equity, and patient-centeredness of care. The causal pathways linking reduced administrative burden to improved quality are multifaceted and powerful. Enhanced Clinical Decision-Making and Patient Safety. When clinicians are liberated from cognitive overload and time pressure, their capacity for deliberate, analytical thinking is restored. Reduced burden allows for more thorough patient histories, more careful review of diagnostic data, and more time to consider differential diagnoses. This directly reduces the likelihood of cognitive errors, a major contributor to diagnostic mistakes and patient harm [16]. Furthermore, with less frustration and fatigue, clinicians are more likely to adhere meticulously to evidence-based protocols, such as sepsis bundles or surgical safety checklists, which are often bypassed when staff are rushed or distracted. Streamlined documentation also improves the accuracy and timeliness of the medical record itself, enhancing communication among care teams and reducing risks associated

with missing or erroneous information during handoffs [17].

Strengthened Therapeutic Relationships and Patient-Centered Communication. The patient-provider relationship is the therapeutic bedrock of medicine. Administrative burden, by forcing clinicians to focus on the computer screen during encounters (the so-called "iPatient" phenomenon), severely erodes this relationship. Interventions that reduce documentation burden, such as scribes or optimized EHR templates, directly increase physicians' ability to engage in face-to-face, empathetic communication with patients [18]. This eye contact and undivided attention build trust, improve the accuracy of information shared by the patient, and enhance shared decision-making. Patients who feel heard and understood report higher satisfaction, exhibit better adherence to treatment plans, and often experience better clinical outcomes. Thus, administrative simplicity directly facilitates the human connection that is central to healing.

Increased Provider Engagement and Retention. Clinician burnout is not merely a workforce issue; it is a profound quality-of-care issue. Burned-out providers are more likely to make errors, exhibit less empathy, and have higher rates of turnover. By systematically reducing the bureaucratic frustrations that fuel burnout, health administration directly invests in a stable, engaged, and experienced clinical workforce [19]. Engaged providers are more likely to participate in quality improvement projects, mentor junior colleagues, and go the extra mile for patients. Reduced turnover also maintains continuity of care, which is critical for managing chronic diseases and complex conditions. The preservation of institutional knowledge and the avoidance of the high costs associated with recruitment and onboarding further contribute to a stable environment conducive to consistent, high-quality care delivery.

Improved Efficiency and Resource Allocation. Finally, reducing administrative waste frees up tangible resources—both time and money—that can be reinvested into direct care activities. The hours saved from reduced pajama time and streamlined processes can be reallocated to seeing more complex patients, conducting follow-ups, or engaging in preventive care counseling. The financial savings from more efficient billing processes, reduced claim denials, and lower staff turnover can be directed toward new medical equipment, additional support staff, or patient assistance programs [20]. This creates a virtuous cycle where administrative efficiency generates the capacity and capital to further enhance clinical quality, allowing the organization

to move from a reactive stance to a proactive one focused on innovation and excellence.

5. Navigating the Headwinds:

Despite the clear rationale and potential benefits, the path to reducing administrative burden is fraught with significant challenges that health administrators must skillfully navigate. A primary obstacle is the substantial financial investment required upfront. Purchasing new technology, hiring scribes or additional support staff, and dedicating personnel and time to process redesign initiatives all incur direct costs. In resource-constrained environments, particularly in public health systems or small rural practices, justifying this investment against other pressing clinical needs can be difficult, even if the long-term return on investment through improved retention and efficiency is positive [21]. Administrators must become adept at building compelling business cases that quantify the cost of burnout and inefficiency to secure necessary funding.

A second, profound challenge is cultural and professional resistance to change. Clinical workflows are deeply ingrained habits, and altering them can be met with skepticism or outright opposition, especially if changes are perceived as being imposed from above without clinical input. The ethos of physician autonomy can sometimes conflict with standardized processes. Furthermore, some clinicians may view administrative tasks as an intrinsic, if unwelcome, part of their professional responsibility and may be reluctant to delegate them [22]. Overcoming this requires exceptional change management skills: transparent communication, inclusive co-design of solutions, piloting changes on a small scale, and demonstrating early wins to build momentum and trust.

The fragmented nature of the healthcare technology landscape presents a third major barrier. Lack of interoperability between different EHR systems, between hospitals and clinics, and between providers and payers remains a persistent issue. An administrator may successfully optimize their internal EHR, but if data from external labs, specialists, or hospitals cannot be integrated seamlessly, clinicians will still waste time tracking down and re-entering information. This problem often extends beyond the control of a single organization, requiring collaborative efforts at the community, state, or national level [23]. Administrators must therefore advocate for and participate in broader health information technology (HIT) policy initiatives while finding pragmatic, interim solutions for data exchange.

Finally, the external regulatory and payer environment can often feel like a shifting battlefield. Just as an organization streamlines its processes to comply with one set of rules, new regulations or payer policies are introduced, potentially recreating complexity. The administrative burden is, in part, a product of these external forces. While advocacy is a long-term strategy, administrators in the short term must build agile organizations capable of adapting to new requirements with minimal disruption to clinical workflows. This requires robust internal systems for monitoring regulatory changes, assessing their impact, and developing efficient implementation plans [24].

6. Conclusion:

In conclusion, the role of health administration in mitigating the administrative burden on clinical staff is not a peripheral support function but a central determinant of healthcare system performance. The crisis of clinician burnout and its nexus with compromised care quality presents one of the most urgent challenges of modern healthcare. Through a multifaceted approach—strategically harnessing technology, relentlessly redesigning processes, thoughtfully reconfiguring team roles, and intelligently navigating the regulatory milieu—health administrators serve as the essential architects of systems that enable rather than encumber clinical work.

The impact of this work extends far beyond improved satisfaction scores or reduced overtime. It strikes at the heart of healthcare's mission: the delivery of safe, effective, timely, efficient, equitable, and patient-centered care. By carving out cognitive space and time for clinicians, administrators directly foster the conditions for superior clinical reasoning, strengthened therapeutic alliances, and a more engaged, resilient workforce. The pursuit of administrative simplicity is, therefore, inextricably linked to the pursuit of clinical excellence. It requires a shift in mindset, viewing every administrative task through the lens of its necessity and its impact on the clinician's time and attention.

The future of healthcare will undoubtedly bring new complexities, from advanced value-based payment models to the integration of artificial intelligence and genomic data. In this evolving landscape, the health administrator's role as a steward of operational sanity and clinical enablement will only grow in importance. The most successful healthcare organizations of tomorrow will be those whose leaders recognize that protecting the time, focus, and well-being of their

clinical staff is the most powerful strategy for achieving the quintuple aim: better patient outcomes, improved patient experience, enhanced provider well-being, lower costs, and greater health equity. The administrator, therefore, stands not as a bureaucrat, but as a vital partner in healing, building the scaffolds upon which clinical excellence can reliably and sustainably flourish.

Author Statements:

- **Ethical approval:** The conducted research is not related to either human or animal use.
- **Conflict of interest:** The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper
- **Acknowledgement:** The authors declare that they have nobody or no-company to acknowledge.
- **Author contributions:** The authors declare that they have equal right on this paper.
- **Funding information:** The authors declare that there is no funding to be acknowledged.
- **Data availability statement:** The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

References

1. Patient satisfaction with the quality of nursing care. Karaca A, Durna Z. *Nursing Open*. 2019;6:535–545.
2. Interventions to improve team effectiveness within health care: a systematic review of the past decade. Buljac-Samardzic M, Doekhie KD, van Wijngaarden JD. *Human Resources for Health*. 2020;18:2.
3. The Significance of Cooperation in Interdisciplinary Health Care Teams as Perceived by Polish Medical Students. Bendowska A, Baum E. *International Journal of Environmental Research and Public Health*. 2023;20:954.
4. Healthcare reimbursement and quality improvement: integration using the electronic medical record comment on "fee-for-service payment--an evil practice that must be stamped out?". Britton JR. *International Journal of Health Policy and Management*. 2015;4:549–551.
5. Predictive analytics and tailored interventions improve clinical outcomes in older adults: a randomized controlled trial. Golas SB, Nikolova-Simons M, Palacholla R, Op den Buijs J, Garberg G, Orenstein A, Kvedar J. *NPJ Digital Medicine*. 2021;4:97.

6. Governance in health - the need for exchange and evidence comment on "governance, government, and the search for new provider models". Chanturidze T, Obermann K. *International Journal of Health Policy and Management*. 2016;5:507–510.
7. Big Data Analytics in healthcare. Batko K, Ślęzak A. *Journal of Big Data*. 2022;9:3.
8. Health care professional development: working as a team to improve patient care. Babiker A, El Husseini M, Al Nemri A, et al. *Sudanese Journal of Paediatrics*. 2014;14:9–16.
9. Artificial intelligence in healthcare: transforming the practice of medicine. Bajwa J, Munir U, Nori A, Williams B. *Future Healthcare Journal*. 2021;8:94.
10. The use of Big Data Analytics in healthcare. Batko K, Ślęzak A. *Journal of Big Data*. 2022;9:3.
11. High-quality health systems in the Sustainable Development Goals era: time for a revolution. Kruk ME, Gage AD, Arsenault C, et al. *The Lancet Global Health*. 2018;6:e1196–e1252.
12. Supporting efficiency improvement in public health systems: a rapid evidence synthesis. Walters JK, Sharma A, Malica E, Harrison R. *BMC Health Services Research*. 2022;22:293.
13. Lean six sigma in healthcare: a systematic literature review on challenges, organisational readiness and critical success factors. McDermott O, Antony J, Bhat S, Jayaraman R, Rosa A, Marolla G, Parida R. *Processes*. 2022;10:1945.
14. Guidelines for prevention of hospital acquired infections. Mehta Y, Gupta A, Todi S, et al. *Indian Journal of Critical Care Medicine*. 2014;18:149–163.
15. Learning from hospital mortality. Stewart K, Choudry MI, Buckingham R. *Clinical Medicine*. 2016;16:530–534.
16. Principles of clinical ethics and their application to practice. Varkey B. *Medical Principles and Practice*. 2021;30:17–28.
17. Remote surveillance technologies: realizing the aim of right patient, right data, right time. Safavi KC, Driscoll W, Wiener-Kronish JP. *Anesthesia & Analgesia*. 2019;129:726–734.
18. Digital transformation in healthcare: technology acceptance and its applications. Stoumpos AI, Kitsios F, Talias MA. *International Journal of Environmental Research and Public Health*. 2023;20:3407.
19. Correlation between hospital finances and quality and safety of patient care. Akinleye DD, McNutt LA, Lazariu V, McLaughlin CC. *PLoS One*. 2019;14:e0219124.
20. Human resource management as an area of changes in a healthcare institution. Hampel K, Hajduova Z. *Risk Management and Healthcare Policy*. 2023;16:31–41.
21. Benchmarking specialty hospitals, a scoping review on theory and practice. Wind A, van Harten WH. *BMC Health Services Research*. 2017;17:245.
22. Patient satisfaction with health care services; an application of physician's behavior as a moderator. Manzoor F, Wei L, Hussain A, Asif M, Shah SI. *International Journal of Environmental Research and Public Health*. 2019;16:3318.
23. Quality indicators for ICU: ISCCM guidelines for ICUs in India. Ray B, Samaddar DP, Todi SK, Ramakrishnan N, John G, Ramasubban S. *Indian Journal of Critical Care Medicine*. 2009;13:173–206.
24. Patient satisfaction survey as a tool towards quality improvement. Al-Abri R, Al-Balushi A. *Oman Medical Journal*. 2014;29:3–7.