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Elevating Surgical Recovery: A Comprehensive, Integrated, and Scholarly Approach to Fostering Nursing Excellence through the Entire Perioperative Process

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Abstract

Background: The process of surgical recovery is significantly influenced by the quality of perioperative care delivered across the preoperative, intraoperative, and postoperative continuum. Surgical skill is paramount, yet the integrative and consistent contribution of nursing care is a primary determinant of patient success, influencing the rate of complications, rate of recovery, and overall satisfaction.

Aim: This study aims to develop an integrative model that depicts the intricate roles of nurses in advancing operative outcomes. It aims to go beyond task-level explanation to provide a view of care that looks back at assessment, education, technological integration, and interprofessional collaboration.

Methods: A Systematic review of recent literature was conducted from databases including PubMed, CINAHL, and the Cochrane Library. Synthesis included meta-analyses, randomized controlled trials, and qualitative studies published between 2014 and 2024 on evidence-based nursing practice in perioperative settings.

Results: The review confirms that nursing interventions form the foundation of surgical success. Key features noted are organized preoperative optimization, meticulous intraoperative stewardship, early mobilization and comfort management postoperatively, and robust discharge coordination. The addition of digital health technologies and a patient-centered ethos further increases such positive outcomes.

Conclusion: This model provides a pragmatic roadmap for healthcare settings to enable nursing staff, organize high-impact interventions and ultimately increase the quality of perioperative care. In the future, an effort must be made to get around implementation barriers, such as resource limitations and resistance to change, to optimize the potential for nurses in the operating room.

Keywords: perioperative care, patient care, surgical recovery models, evidence-based practice, interdisciplinary collaboration, digital health, patient safety, continuum of care.

1. Introduction

Surgery is a major physiological injury, and recovery is a complex process influenced by an array of factors unrelated to technical success in surgery (Ljungqvist et al., 2017). Traditionally, the history of operative outcomes had been focused on the ability of the surgeon; nonetheless, a strong body of evidence currently highlights the fact that the quality of perioperative care is an equally fundamental determinant of patient success (Stock & McDermott, 2023). The perioperative continuum—encompassing preoperative, intraoperative, and postoperative phases—is replete with potential complications, including surgical site infections (SSIs), venous thromboembolism (VTE), pneumonia, and delayed healing, which undermine quality of life and impose

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a health system burden (Ban et al., 2017). In this high-stakes environment, the nursing role has evolved from a peripheral auxiliary function to a central, outcome-defining force. Modern perioperative practice is a dynamic, evidence-based practice that incorporates skilled assessment, clinical judgment, patient advocacy, and technical ability (Rothrock, 2022).

Theoretical paradigms provide the foundation for an expanded scope. Donabedian's model, which measures structure, process, and outcome, helps conceptualize how nursing resources (structure) and interventions (process) have a direct influence on recovery measures (outcome) (Moayed et al., 2022). Further, Benner's "Novice to Expert" model outlines the fundamental requirement for expert nursing judgment within high-acuity operative settings (Benner, 1984). The universal adoption of Enhanced Recovery After Surgery (ERAS) protocols has also cemented the nurse's role, institutionalizing processes that facilitate rapid recovery through evidence-based interventions related to nutrition, mobilization, and pain management (McGinigle et al., 2019). This paper synthesizes current evidence toward the creation of a comprehensive framework for perioperative nursing. It posits that optimal outcomes are achieved through a patient-centered philosophy executed through four clinical domains and facilitated by two enablers, positioning the nurse as the key figure of the absolute thread interweaving and guiding the entire surgical process.

Foundational Preparation: Enhancing Patient Resilience Pre-Operation

Preoperative time is a strategic window through which, instead of lying idly, one is able to actively construct the physiological and psychological resources of the patient. This pre-emptive approach, termed "prehabilitation," shifts the paradigm from risk assessment to actively participating in capacity building, bringing the patient onboard as co-pilot of their own care (Santa Mina et al., 2014). The nurse-led preoperative assessment is the turning point of this phase, and it is an all-embracing investigative process that digs deep into the patient's entire health environment (Wahba, 2016). It extends far beyond medications and allergies to include a systems review in depth, social determinants of health (i.e., resource access, support network, literacy about health), as well as psychological screening for depression or anxiety, which are robust predictors of recovery postoperatively (Patel et al., 2024). By utilizing standardized tools like the American Society of Anesthesiologists (ASA) risk stratification classification and the Malnutrition Universal Screening Tool (MUST), objective communication of patient status and the detection of modifiable risks, i.e., poorly managed blood glucose or malnutrition, to allow for targeted preemptive intervention are achievable (Markovic et al., 2018; Liu et al., 2023).

Psychological support is also important, since surgery-related anxiety can trigger a stress response that raises cortisol levels, suppresses immune function, and impairs healing (Walker et al., 2023). Nurses obviate this through evidence-based strategies grounded in cognitive-behavioral and mindfulness theory, such as active listening and guided relaxation, that have been proven to significantly reduce preoperative anxiety (Cai et al., 2023). While doing so, tailored education empowerment demystifies the surgical process. By testing health literacy and learning styles, nurses provide tailored information about the surgery, pain management, and recovery milestones to transform patients from passive, anxious recipients to active, informed participants, the most significant predictor of a less complicated recovery (Wongkietkachorn et al., 2018; Yun et al., 2023).

Prehabilitation is the concept of enhancing the functional reserve of the patient to endure surgery (Knight et al., 2021). Nurses coordinate multidisciplinary care that encompasses physical preconditioning to maximize cardiopulmonary conditioning, nutritional therapy with high-protein immunonutrition supplements, and coordinated alcohol and smoking cessation counseling (Mustoe et al., 2020; Liu et al., 2023). Research has demonstrated that brief preconditioning enhances physiological resilience, reduces postoperative fatigue, reduces complications, and allows for quicker recovery, in effect "arming" the patient against the impending challenge (Santa Mina et al., 2014). Table 1 and Figure 1 summarize the prioritization of preoperative nursing measures and their effect.

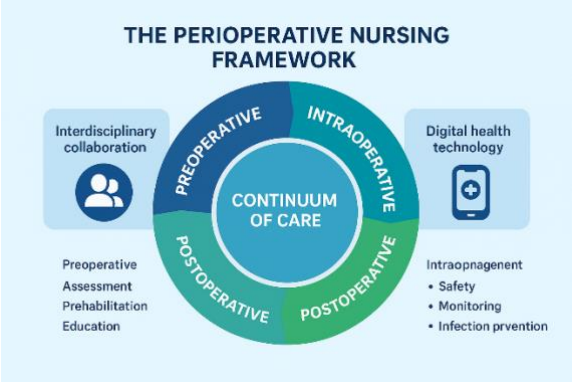

Figure 1. The perioperative nursing framework.

Operational Vigilance: Procedural Integrity Ensuring

Minute attention is required for intraoperative care, wherein the circulating and scrub nurses perform the role of unflinching sentinels of patient safety. They work with scrupulous advocacy and advanced technical skill in an acuity setting (Rothrock, 2022). Dynamic hemodynamic monitoring is a key responsibility, requiring nurses to transcend the simple reading of monitors to that of interpretive monitoring of anesthetic depth and cardiovascular stability (Patel et al., 2024). They decode trends in heart rate, blood pressure, oxygen saturation, and end-tidal CO_2 to detect subtle findings of complications like hemorrhage or malignant hyperthermia long before they become crises, and direct goal-directed fluid management to maintain optimal organ perfusion (Vincent et al., 2015; Marsman et al., 2023).

Table 1. Prioritization of Preoperative Nursing Measures and Their Effect

Nursing Intervention	Key Actions	Expected Impact on Outcomes	Supporting Evidence
Holistic Assessment & Risk Stratification	Comprehensive history (medical, social, psychological); Physical exam; Use of ASA, MUST tools; Identification of modifiable risks (e.g., hyperglycemia).	Creates personalized care plan; Allows for preemptive optimization; Reduces unforeseen complications.	Wahba (2016); Markovic et al. (2018)
Psychological Preparation	Anxiety screening; Therapeutic communication; Mindfulness techniques; CBT principles; Preoperative counseling.	Reduces preoperative anxiety and stress response; Improves pain tolerance; Increases patient cooperation and satisfaction.	Patel et al. (2024); Cai et al. (2023)
Prehabilitation (Prehab)	Coordination of exercise programs; Nutritional optimization; Smoking cessation counseling; Alcohol use management.	Increases physiological reserve; Reduces postoperative pulmonary complications; Enhances wound healing; Shortens LOS.	Santa Mina et al. (2014); Knight et al. (2021)
Tailored Patient Education	Teach-back method; Culturally competent materials; Setting expectations for pain, mobility, recovery milestones.	Improves medication and care plan adherence; Reduces anxiety; Empowers patient and family; Decreases readmission rates.	Wongkietkachorn et al. (2018); Yun et al. (2023)

Prevention of surgical site infection (SSI) is of utmost importance, and nurses are guardians of aseptic technique (Wahba, 2016). Their scrupulous adherence to protocols—from preoperative antisepsis of the skin with chlorhexidine-alcohol to the prompt administration of prophylactic antibiotics, sterile field maintenance, and controlling operating room traffic—immediately reduces the incidence of SSIs, a major cause of morbidity and cost (Umana, 2023; Mustoe et al., 2020). Nurses also show competent ergonomic stewardship in protecting the anesthetized patient from iatrogenic trauma. Using high-level biomechanical knowledge, they immobilize patients safely using immobilization devices and padding to prevent pressure ulcers, nerve injuries, and musculoskeletal injuries that come with long procedures on prone, supine, or lateral positions, such that the patient emerges from the process uninjured (Cai et al., 2023; Greenlee et al., 2017).

The Recovery Blueprint: Choreographing Postoperative Renewal

Postoperative recovery is an active process of healing and mobilization during which nursing practice is purposefully organized to support recovery and prevent complications. Effective pain control is also a priority because pain that is not controlled inhibits coughing, deep breathing, and mobilization, thereby potentially causing atelectasis, pneumonia, and VTE (Mustoe et al., 2020). Nurses implement a multimodal analgesia approach, synergizing pharmacologic agents like opioids, NSAIDs, and regional blocks with non-pharmacologic modalities like guided imagery, TENS, and cryotherapy (Zeleke et al., 2021). This approach maximizes pain relief with a decrease in the side effects of high-dose opioids like respiratory depression and ileus (Patel et al., 2024). The nurses are resolute in their assessment using standardized scales and act as the patient's advocate to ensure pain is controlled to a level that allows participation in recovery therapy (Greenlee et al., 2017).

One of the important shifts in postoperative care has been the movement away from prolonged bed rest toward early and progressive mobilization, driven by the nursing staff (Umana, 2023). Recognizing that immobility causes venous stasis, pulmonary secretions pooling, and muscle atrophy, nurses assess patient readiness, overcome obstacles like pain or drains, and collaborate with physiotherapists to mobilize (Mithany et al., 2023). This "mobilization as medicine" is a powerful intervention against VTE, pneumonia, and functional loss, significantly minimizing length of stay (Umana, 2023). Meanwhile, nurses provide vital metabolic support to fuel the healing process. They conduct ongoing nutritional assessment, encourage the transition of oral intake in accordance with ERAS protocols, and organize enteral or parenteral nutrition for those unable to take orally, administering adequate protein and calories to promote tissue repair and immune function (Walia et al., 2019). Careful hydration management is also critical to maintain renal perfusion and optimize healing (Pérez-Jover et al., 2019).

Sustaining Recovery Beyond the Hospital Walls

Hospital-to-home transition is considered a high-risk period that has been associated with high rates of avoidable complications and readmission. Discharge planning, with utmost care at the hands of nurses, is critical for closing the gap and sustaining recovery momentum (Sherrer et al., 2022). The central support of this process is competency development and self-management instruction,

to establish confidence and capability in patients and caregivers to provide care on their own (Wahba, 2016). By employing the use of the "teach-back" method, nurses provide comprehensive, experiential teaching in wound care, medication management, activity restrictions, and, most crucially, recognizing red-flag signs that necessitate immediate medical attention (Stephenson et al., 2020; Mohammmed Iddrisu et al., 2018). This empowerment counteracts fear and is one of the key readmission prevention measures.

To allow for seamless care transition, nurses act as coordinators, stage-managing the passage to community care (Ge et al., 2023). This involves organizing the first follow-up visit before discharge, creating comprehensive summaries to primary care physicians, and connecting patients with needed services like home health nursing or physical therapy (Sherrer et al., 2022). Telephone follow-up calls following discharge, typically by nurses 24-48 hours after discharge, are a very effective intervention for problem-solving challenges, reminding patients of education, and identifying early warning signs of complications to prevent unnecessary use of the emergency department (Ge et al., 2023).

Synergistic Care: Interdisciplinary Teamwork and Technological Facilitators

Maximum outcomes are not possible single-handedly; they are achieved by effortless collaboration and the wise application of technology. Today's operating room staff is an advanced biome, and the nurse most often takes the central position, promoting interprofessional cohesion (Patel et al., 2024). Nurses, through preoperative briefs, intraoperative assistance, and participation in multidisciplinary rounds, promote a comprehensive, patient-centered plan where each professional's expertise is aligned, which has been shown to reduce errors and improve recovery (Sunkara et al., 2020; Chellam Singh & Arulappan, 2023).

Effective communication is the cornerstone of this alliance. Nurses are the greatest advocates of standard communication tools like the SBAR (Situation, Background, Assessment, Recommendation) model, which presents a concise, uniform mechanism for communicating vital information, especially in emergencies, thereby reducing miscommunication—a key driver of adverse events (Ge et al., 2023; Yun et al., 2023). Combining these strategies with Electronic Health Records (EHRs) ensures that everyone on the team shares a common mental model of the patient status and plan (Mustoe et al., 2020).

The use of technology as a force multiplier to transform nursing practice. Remote patient monitoring with wearable sensors enables nurses to track vital signs and activity levels post-discharge, allowing them to read trends and act proactively before complications escalate (Patel et al., 2024; Knight et al., 2021). Telehealth platforms extend reach, with nurses conducting preoperative consultations and postoperative follow-ups remotely, beyond geographical boundaries and providing continuous support (Umana, 2023; Ge et al., 2023). Furthermore, high-fidelity simulation training advances skills further by allowing nurses to practice crisis management and enhance their skills in a risk-free environment, which directly improves clinical performance and patient safety (Arakelian et al., 2017; Mustoe et al., 2020). Table 2 represents the enablers of perioperative nursing excellence. Figure 2 provides an overview of the key interventions & outcomes.

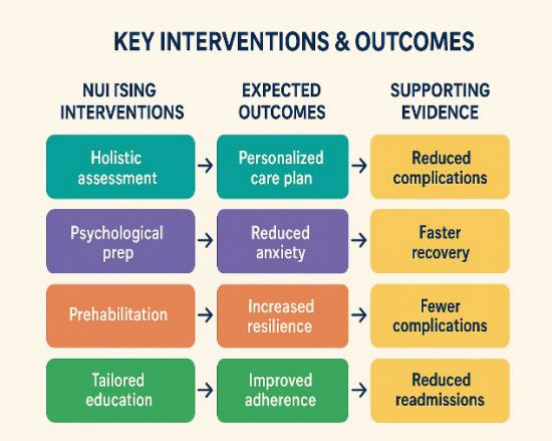

Figure 2. Key interventions & outcomes.

Table 2. Enablers of Perioperative Nursing Excellence

Enabler Category	Specific Strategies/Tools	Function in Perioperative Care	Benefits & Outcomes	Ref.
Interdisciplinary Collaboration	Multidisciplinary Team Rounds; Preoperative Huddles/Time-Outs; Structured Handoff Protocols (e.g., SBAR).	Enhances team communication; ensures shared mental model; reduces errors; clarifies roles.	Improved patient safety; Reduced complication rates; Enhanced efficiency; Higher staff satisfaction.	Patel et al. (2024); Ge et al. (2023)
Digital Health Technology	**Remote Monitoring Wearables; Telehealth Platforms; Electronic Health Records (EHRs); Mobile Health Apps.**	Extends care beyond the hospital; enables continuous data collection; facilitates virtual visits; supports patient education.	Proactive intervention; Reduced readmissions; Improved access to care; Enhanced patient	Knight et al. (2021); Umana (2023)

			engagement and adherence.	
Education & Training	**High-Fidelity Simulation; Virtual Reality (VR) Training; Continuing Education on ERAS/Evidence-Based Practice.**	Allows safe practice of high-acuity skills; improves crisis resource management; ensures competency with new protocols.	Increased nurse confidence and competence; Improved teamwork; Higher preparedness for emergencies; Better adoption of best practices.	Arakelian et al. (2017); Markovic et al. (2018)

Conclusion

Evidence compiled in this article talks of a compelling and comprehensive framework where perioperative nursing care is the overarching thread through all phases of the surgery process. From building resilience before the operation to procedural safety, it is nurses who orchestrate revival, and they ensure recovery sets in after discharge. Nurses are the ever-present champions and savvy clinical mediators guiding the patient through a complex system. Their practice, driven by interdisciplinary collaboration and technological advancements, is immediately translated into tangible patient gain, including fewer complications, shorter stays, reduced readmission, and increased satisfaction.

Surgical excellence in the future, therefore, depends on a systemic and renewed commitment to investing in these critical nursing roles. This investment must transcend rhetoric to action: providing robust continuing education and support for advanced certification, adopting and paying for supportive technologies like telehealth and remote monitoring, and officially recognizing the huge value that nursing brings through accurate staffing models and professional career paths. By so doing, health care systems will be in a position to leverage the best of the nursing profession to achieve the ultimate value-based care prize: best outcomes and experiences for every surgical patient.

References

1. Arakelian, E., Swenne, C. L., Lindberg, S., Rudolfsson, G., & von Vogelsang, A. C. (2017). The meaning of person-centred care in the perioperative nursing context from the patient's perspective–an integrative review. *Journal of clinical nursing*, *26*(17-18), 2527-2544. https://doi.org/10.1111/jocn.13639
2. Ban, K. A., Minei, J. P., Laronga, C., Harbrecht, B. G., Jensen, E. H., Fry, D. E., ... & Duane, T. M. (2017). American College of Surgeons and Surgical Infection Society: surgical site infection guidelines, 2016 update. *Journal of the American College of Surgeons*, *224*(1), 59-74. *DOI:* 10.1016/j.jamcollsurg.2016.10.029
3. Benner, P. (1984). From novice to expert excellence and power in clinical nursing practice. *AJN The American Journal of Nursing*, *84*(12), 1479. https://journals.lww.com/ajnonline/toc/1984/12000
4. Cai, J., Huang, X., & He, L. (2023). An evidence-based general anaesthesia and prone position nursing checklist: Development and testing. *Nursing Open*, *10*(3), 1340-1349. https://doi.org/10.1002/nop2.1382
5. Chellam Singh, B., & Arulappan, J. (2023). Operating room nurses' understanding of their roles and responsibilities for patient care and safety measures in intraoperative practice. *SAGE open nursing*, *9*, 23779608231186247. https://doi.org/10.1177/23779608231186247
6. Ge, J., Zhang, Y., Fan, E., Yang, X., Chu, L., Zhou, X., ... & Liu, W. (2023). Community nurses are important providers of continuity of care for patients with chronic diseases: a qualitative study. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *60*, 00469580231160888. https://doi.org/10.1177/00469580231160888
7. Greenlee, H., DuPont-Reyes, M. J., Balneaves, L. G., Carlson, L. E., Cohen, M. R., Deng, G., ... & Tripathy, D. (2017). Clinical practice guidelines on the evidence-based use of integrative therapies during and after breast cancer treatment. *CA: a cancer journal for clinicians*, *67*(3), 194-232. https://doi.org/10.3322/caac.21397
8. Knight, S. R., Ng, N., Tsanas, A., Mclean, K., Pagliari, C., & Harrison, E. M. (2021). Mobile devices and wearable technology for measuring patient outcomes after surgery: a systematic review. *NPJ digital medicine*, *4*(1), 157. https://doi.org/10.1038/s41746-021-00525-1
9. Ljungqvist, O., Scott, M., & Fearon, K. C. (2017). Enhanced recovery after surgery: a review. *JAMA surgery*, *152*(3), 292-298. doi:10.1001/jamasurg.2016.4952
10. Liu, L. B., Li, J., Lai, J. X., & Shi, S. (2023). Harnessing interventions during the immediate perioperative period to improve the long-term survival of patients following radical gastrectomy. *World Journal of Gastrointestinal Surgery*, *15*(4), 520. https://doi.org/10.4240/wjgs.v15.i4.520
11. Markovic, D., Jevtovic-Stoimenov, T., Stojanovic, M., Vukovic, A., Dinic, V., Markovic-Zivkovic, B., & Jankovic, R. J. (2018). Addition of clinical risk scores improves prediction performance of American Society

of Anesthesiologists (ASA) physical status classification for postoperative mortality in older patients: a pilot study. *European Geriatric Medicine*, *9*(1), 51-59. https://doi.org/10.1007/s41999-017-0002-6

12. Marsman, M., Kappen, T. H., Vernooij, L. M., Van Der Hout, E. C., Van Waes, J. A., & Van Klei, W. A. (2023). Association of a liberal fasting policy of clear fluids before surgery with fasting duration and patient well-being and safety. *JAMA surgery*, *158*(3), 254-263. doi:10.1001/jamasurg.2022.5867
13. McGinigle, K. L., Eldrup-Jorgensen, J., McCall, R., Freeman, N. L., Pascarella, L., Farber, M. A., ... & Crowner, J. R. (2019). A systematic review of enhanced recovery after surgery for vascular operations. *Journal of vascular surgery*, *70*(2), 629-640. https://doi.org/10.1016/j.jvs.2019.01.050
14. Mithany, R. H., Daniel, N., Shahid, M. H., Aslam, S., Abdelmaseeh, M., Gerges, F., ... & Abdallah, S. (2023). Revolutionizing surgical care: the power of enhanced recovery after surgery (ERAS). *Cureus*, *15*(11). DOI: 10.7759/cureus.48795
15. Moayed, M. S., Khalili, R., Ebadi, A., & Parandeh, A. (2022). Factors determining the quality of health services provided to COVID-19 patients from the perspective of healthcare providers: Based on the Donabedian model. *Frontiers in public health*, *10*, 967431. https://doi.org/10.3389/fpubh.2022.967431
16. Mohammmed Iddrisu, S., Hutchinson, A. F., Sungkar, Y., & Considine, J. (2018). Nurses' role in recognising and responding to clinical deterioration in surgical patients. *Journal of Clinical Nursing*, *27*(9-10), 1920-1930. https://doi.org/10.1111/jocn.14331
17. Mustoe, M. M., Clark, J. M., Huynh, T. T., Tong, E. K., Wolf, T. P., Brown, L. M., & Cooke, D. T. (2020). Engagement and effectiveness of a smoking cessation quitline intervention in a thoracic surgery clinic. *JAMA surgery*, *155*(9), 816-822. doi:10.1001/jamasurg.2020.1915
18. Patel, P. M., Green, M., Tram, J., Wang, E., Murphy, M. Z., Abd-Elsayed, A., & Chakravarthy, K. (2024). Beyond the pain management clinic: the role of AI-integrated remote patient monitoring in chronic disease management–a narrative review. *Journal of Pain Research*, 4223-4237. https://doi.org/10.2147/JPR.S494238
19. Pérez-Jover, V., Sala-González, M., Guilabert, M., & Mira, J. J. (2019). Mobile apps for increasing treatment adherence: systematic review. *Journal of medical Internet research*, *21*(6), e12505. https://doi.org/10.2196/12505
20. Rothrock, J. C. (2022). *Alexander's care of the patient in surgery-E-Book*. Elsevier Health Sciences.
21. Santa Mina, D., Clarke, H., Ritvo, P., Leung, Y. W., Matthew, A. G., Katz, J., ... & Alibhai, S. M. H. (2014). Effect of total-body prehabilitation on postoperative outcomes: a systematic review and meta-analysis. *Physiotherapy*, *100*(3), 196-207. https://doi.org/10.1016/j.physio.2013.08.008
22. Sherrer, M., Simmons, J. W., & Dobyns, J. B. (2022). Preoperative risk stratification: identifying modifiable risks for optimization. *Current Anesthesiology Reports*, *12*(1), 10-25. https://doi.org/10.1007/s40140-022-00519-z
23. Stephenson, C., Mohabbat, A., Raslau, D., Gilman, E., Wight, E., & Kashiwagi, D. (2020, November). Management of common postoperative complications. In *Mayo Clinic Proceedings* (Vol. 95, No. 11, pp. 2540-2554). Elsevier. https://doi.org/10.1016/j.mayocp.2020.03.008
24. Stock, G., & McDermott, C. (2023). The effects of physicians on operational and financial performance in United States hospitals: staffing, human capital and knowledge spillovers. *International Journal of Operations & Production Management*, *43*(7), 1068-1097. https://doi.org/10.1108/IJOPM-07-2022-0457
25. Sunkara, P. R., Islam, T., Bose, A., Rosenthal, G. E., Chevli, P., Jogu, H., ... & Speiser, J. L. (2020). Impact of structured interdisciplinary bedside rounding on patient outcomes at a large academic health centre. *BMJ quality & safety*, *29*(7), 569-575. https://doi.org/10.1136/bmjqs-2019-009936
26. Umana, J. (2023). *Implementation of a Patient Mobility Program to Reduce Length of Stay & Venous Thromboembolism (VTE)* (Doctoral dissertation, Rutgers University The State University of New Jersey, RBHS School of Nursing).
27. Vincent, J. L., Pelosi, P., Pearse, R., Payen, D., Perel, A., Hoeft, A., ... & Rhodes, A. (2015). Perioperative cardiovascular monitoring of high-risk patients: a consensus of 12. *Critical Care*, *19*(1), 224. https://doi.org/10.1186/s13054-015-0932-7
28. Wahba, S. (2016). Nurses' knowledge, attitude and practice regarding infection control in operating rooms in Port Said hospitals. *Port Said scientific journal of nursing*, *3*(1), 23-38. https://doi.org/10.21608/pssjn.2019.32283
29. Walia, H., Banoub, R., Cambier, G. S., Rice, J., Tumin, D., Tobias, J. D., & Raman, V. T. (2019). Perioperative provider and staff competency in providing culturally competent LGBTQ healthcare in pediatric setting. *Advances in Medical Education and Practice*, 1097-1102. https://doi.org/10.2147/AMEP.S220578
30. Walker, D. D., Walton, T. O., Jaffe, A. E., Graupensperger, S., Rhew, I. C., & Kaysen, D. (2023). Improving voluntary engagement for posttraumatic stress disorder treatment among active-duty service members using motivational enhancement therapy. *Psychological trauma: theory, research, practice, and policy*. https://doi.org/10.1037/tra0001562
31. Wongkietkachorn, A., Wongkietkachorn, N., & Rhunsiri, P. (2018). Preoperative needs-based education to reduce anxiety, increase satisfaction, and decrease time spent in day surgery: a randomized

controlled trial. *World journal of surgery*, *42*(3), 666-674. https://doi.org/10.1007/s00268-017-4207-0

32. Yun, J., Lee, Y. J., Kang, K., & Park, J. (2023). Effectiveness of SBAR-based simulation programs for nursing students: a systematic review. *BMC Medical Education*, *23*(1), 507. https://doi.org/10.1186/s12909-023-04495-8
33. Zeleke, S., Kassaw, A., & Eshetie, Y. (2021). Non-pharmacological pain management practice and barriers among nurses working in Debre Tabor Comprehensive Specialized Hospital, Ethiopia. *Plos one*, *16*(6), e0253086. https://doi.org/10.1371/journal.pone.0253086