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**| RESEARCH ARTICLE**

## **Navigating the New Frontier: Enhanced Recovery After Surgery (ERAS) Protocols in Gynecological Nursing Care**

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### **| ABSTRACT**

Gynecological surgery procedures are responsible for millions of hospital admissions worldwide annually; however, the perioperative recovery protocols have always been based on conservative strategies, which are often paternalistic and based on the convenience of the surgeon rather than the patient. Enhanced Recovery After Surgery (ERAS) protocols signify a paradigm shift, a coordinated, multimodal approach to surgery that undermines traditional practices of lengthy fasting, routine use of opioids, and delayed mobilization. Despite strong evidence of surgical impact, the crucial role of nursing in ERAS implementation has not been fully explored in the scholarly literature. This integrative review explores the current understanding of ERAS programs in gynecological surgical practice, focusing specifically on the nursing profession in the preoperative, operative, and post-operative phases. This paper also outlines the institutional challenges to the uptake of ERAS and suggests evidence-based strategies for its sustainable implementation. A systematic search of the PubMed, CINAHL, Cochrane Library, Embase, and MEDLINE databases was performed for literature published from 2017 to 2026. The Boolean search strategies included "ERAS," "enhanced recovery," "gynecological surgery," "perioperative nursing," "hysterectomy," and "The Critical Appraisal Skills Program (CASP) was used to critically appraise 47 studies that met the inclusion criteria. ERAS protocols have been shown to repeatedly shorten hospital stays by 1-2 days, reduce postoperative opioid use by 30-60 percent, improve complication rates, and enhance patient-reported outcomes of quality recovery. The implementation of the nurse's role as a vital coordinator through-out the surgical continuum is often limited by a lack of knowledge, institutional resistance, and poor inter-professional collaboration. The adoption of ERAS becomes more standardized when it is integrated into gynecological nursing practice, which involves the investment of education through simulation, nurse champion models, and the design of protocols from an equity perspective. Future studies should focus on nursing-led randomized controlled trials and long-term patient outcome studies. Borrowed from Kolcaba's Theory of Comfort, this review emphasizes the patient-centered nursing role in the perioperative period, rather than that of a mere follower of surgical instructions.

### **| KEYWORDS**

Enhanced Recovery after Surgery, ERAS, Gynecological Nursing, Perioperative Care, Hysterectomy, Opioid Stewardship, Patient-centered Care, Nursing Role, Evidence-based Practice

### **| ARTICLE INFORMATION**

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## **1. INTRODUCTION**

Hysterectomy is the second most common major gynecological surgery in the United States, with over 300,000 surgeries performed annually (Whiteman et al., 2008; Wright et al., 2020). The perioperative nursing burden among women undergoing

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surgical health is unimaginable when combined with the rest of the gynecological procedures, such as myomectomy, oophorectomy, pelvic organ prolapse repair, and cytoreductive surgery for ovarian malignancies. However, the standard model of surgical recovery has remained largely unchanged for decades: patients were instructed to fast from midnight, were administered routine bowel preparations, had to tolerate nasogastric tubes, were administered relatively high doses of opioid analgesia, and remained in bed until the surgeon felt it was safe for them to go. These practices are not supported by scientific data and result in prolonged hospitalization, increased complications, and unnecessary patient discomfort [1].

This paradigm has been challenged over the last 20 years by the development of Enhanced Recovery After Surgery (ERAS) protocols. ERAS was initially defined in colorectal surgery by Danish surgeon Henrik Kehlet in 1997 and is a multimodal, evidence-based pathway of perioperative care that aims to reduce the surgical stress response, maintain physiological stability, and accelerate functional recovery (Kehlet, 1997). The formal organization of the ERAS Society in 2001 and its adaptation to gynecological surgery have led to the widespread dissemination of these principles internationally and increasing clinical evidence of their benefits. However, the implementation of ERAS in gynecological surgery has been inconsistent, and the role of nursing in the success of the protocol has rarely been explored in scholarly literature [2].

Nurses play a vital role in the perioperative continuum of care for patients. They are the first clinicians that patients see in the preoperative assessment clinic, the last face that patients see before they are induced into anesthesia, the watchful eye watching patients as they emerge from anesthesia in the recovery room, and the primary clinician responsible for teaching patients about discharge preparation. No one in the operating room has more sustained whole-person contact during the operative experience than the surgeon. This means that, contrary to popular belief, the success of the ERAS protocol lies with nurses, not surgeons or anesthesiologists. Poorly educated nurses who do not encourage ambulation, administer early oral feeding, or rely on opioid analgesia may compromise a well-designed ERAS protocol, however. Conversely, a nursing team educated in the principles of ERAS and with the authority to support the concepts can lead to significant patient outcomes in any setting, including those with limited resources. [3].

This integrative review is based on Kolcaba's (2003) theory of comfort, which offers a theoretical framework for conceptualizing patient well-being in four contexts: physical, psychospiritual, sociocultural, and environmental, across three types of comfort relief, ease, and transcendence. When examined in this light, ERAS protocols become more than just health system efficiencies; they are a means of restoring comfort as a moral obligation in nursing. The remainder of this paper is structured to reflect the clinical processes. After a critical examination of the evidence, it covers nursing responsibilities for each phase of the perioperative process, challenges to implementation, strategies for sustainable implementation, specific considerations in gynecologic oncology, and implications for practice, education, and policy [4].

This study was designed to draw inferences from the current evidence on ERAS protocols in surgery for females to explicitly examine the nursing perspective. The specific goals are as follows: (1) to review ERAS outcome data in gynecological surgery; (2) to define nursing responsibilities throughout the perioperative continuum in an ERAS context; (3) to explore barriers and facilitators to ERAS implementation in nursing practice; (4) to focus on special populations, especially those with gynecological malignancies; and (5) to provide evidence-based recommendations for nursing practice, education, and health policy.

## **2. LITERATURE REVIEW**

### **2.1 Search Strategy and Methodological Approach**

Given the diversity of study designs found in the ERAS nursing literature, which ranges from RCTs to cohort studies, qualitative studies of clinician experiences, and implementation science reports, an integrative review methodology was chosen (Whittemore & Knaf, 2005). The electronic databases searched were PubMed, CINAHL Plus with Full Text, Cochrane Central Register of Controlled Trials, Embase, and MEDLINE, via Ovid. The search period was January 2017 to March 2026, and seminal works before that time were included if they had significant foundations in the works searched [5].

The primary terms were combined using the Boolean operators OR ("enhanced recovery after surgery" OR "ERAS" OR "enhanced recovery proto-col" OR "enhanced recovery after gynecologic surgery" OR "ERAS after gynecologic surgery" OR "enhanced recovery after hysterectomy" OR "ERAS after hysterectomy") and "nurs" OR "perioperative care" OR "postoperative nursing" OR "patient education" and population descriptors ("gynecolog" OR "gynaecolog" OR "hysterectomy" OR "oophorectomy" OR "ovarian cancer" OR "cervical cancer" OR "endometrial cancer"). Studies were eligible for inclusion if they reported clinical results from the implementation of ERAS in adult female populations undergoing gynecological surgery, were published in English-language peer-reviewed journals, and provided sufficient information for quality appraisal. Case reports, editorials, and commentaries were excluded. A total of 312 records were identified after the initial screening, of which 47 were retained after removing duplicates and full-text screening of studies for the inclusion criteria [6].

Critical appraisal was conducted using the Critical Appraisal Skills Programme (CASP) checklists, Randomized Controlled Trial (RCT), and Cohort Study (Cohort Study). The studies were evaluated individually based on the following criteria: clarity of the research question, methodological rigor, confounding control, and applicability of the findings. There was no judgement as to quality, which excluded any studies, but any methodological limitations were mentioned where relevant when determining confidence in the findings.

**Table 1** Literature Search Summary by Database and Study Design

Database	Records Retrieved	After Deduplication	Final Inclusion
PubMed	124	98	18
CINAHL Plus	87	71	12
Cochrane Library	34	28	7
Embase	43	36	6
MEDLINE (Ovid)	24	20	4
<b>Total</b>	<b>312</b>	<b>253</b>	<b>47</b>

**Note.** Records retrieved reflect the initial keyword search output prior to the title/abstract screening. CASP: Critical Appraisal Skills Program.

## 2.2 Core ERAS Elements in Gynecological Surgery

ERAS protocols are not just one intervention; they are care bundles, and adherence to the entire pathway is the factor that will improve outcomes (Nelson et al., 2016). In 2016, the ERAS guidelines for gynecological surgery were formally endorsed by the Society of Gynecologic Oncology and the American College of Obstetricians and Gynecologists and were updated to incorporate new evidence for individual bundle elements (Mendivil et al., 2018; ACOG, 2019). The recommendations are broken down by the time period in which they are made as follows: prior to, during, and after the procedure [7].

Preoperative elements included patient and family education, carbohydrate loading with clear carbohydrate drinks 2 h prior to surgery (except for colorectal-involved surgery), anxiety-reducing counseling, nutritional screening and optimization, cessation counseling for tobacco and alcohol use, and preemptive analgesics and antiemetics. Intraoperative components focused on multimodal analgesia, which included regional nerve block, wound infiltration, and timed administration of non-opioid analgesics, as well as goal-directed fluid therapy using hemodynamic monitoring, maintenance of normothermia using forced-air warming devices and warmed intravenous fluids, a preference for minimally invasive surgical techniques, and routine antiemetic prophylaxis. Elements in the postoperative period involved early removal of the urinary catheter (usually within 6-12 hours), early oral fluid and diet progression, planned multimodal pain treatment regimes to limit opioid use, early ambulation (2-4 hours after extubation in the presence of a protocol), and structured discharge planning with patient-reported outcome monitoring [8].

**Table 2** ERAS Protocol Components by Perioperative Phase

Phase	Component	Evidence Level	Primary Nursing Role
Preoperative	Patient education & teach-back	Level I	Educator / Communicator
Preoperative	Carbohydrate loading (2 hr pre-op)	Level I	Assessor / Administrator
Preoperative	Bowel prep avoidance	Level I	Patient Advocate
Preoperative	Nutritional screening (MUST/NRS-2002)	Level II	Screeener / Referrer
Preoperative	Anxiety reduction counseling	Level II	Therapeutic Communicator
Intraoperative	Normothermia maintenance	Level I	Monitor / Implementer
Intraoperative	Goal-directed fluid therapy	Level I	Collaborator / Documenter
Intraoperative	Multimodal analgesia initiation	Level I	Coordinator
Intraoperative	Positioning / pressure injury prevention	Level II	Protector
Postoperative	Urinary catheter removal (6–12 hr)	Level I	Protocol Driver
Postoperative	Early ambulation (2–4 hr post-op)	Level I	Facilitator / Motivator
Postoperative	Early oral intake progression	Level I	Assessor / Initiator
Postoperative	Opioid-sparing analgesia (NRS/CPOT)	Level I	Assessor / Administrator
Postoperative	PONV assessment and management	Level I	Monitor / Intervener
Postoperative	Discharge education & navigation	Level II	Educator / Coordinator

**Note.** Evidence levels were based on the ACOG (2019) and ERAS Society (2019) guidelines. MUST, Malnutrition Universal Screening Tool; NRS, Numeric Rating Scale; CPOT, Critical-Care Pain Observation Tool; PONV, postoperative nausea and vomiting.

## **2.3 Outcomes Evidence: What ERAS Achieves**

### **2.3.1 Length of Hospital Stay**

The reduction in hospital length of stay (LOS) is the most consistently reported outcome correlated with ERAS implementation in gynecological surgery. In 2013, Kalogera et al. published a landmark meta-analysis that found a mean LOS reduction of 1.5 days after ERAS was adopted for open gynecologic oncology surgery. This effect was confirmed in more recent pooled analyses of open and minimally invasive surgeries. After implementing a standard ERAS pathway for benign hysterectomy, Wijk et al. (2019) reported a decrease of 1.2 days, and Modesitt et al. (2016) showed a decrease in time from 4.9 days to 2.1 days after patients underwent cytoreductive surgery for ovarian malignancy. Importantly, these reductions did not coincide with an increase in 30-day readmissions, a concern regarding patient safety that has been raised since early discharge might simply move the complications to the outpatient setting [9].

### **2.3.2 Postoperative Pain and Opioid Utilization**

One of the most clinically important aspects of ERAS is multimodal opioid-sparing analgesia, especially in the context of the opioid epidemic in the United States and concerns about prescription opioid dependency worldwide. Studies have shown that patients undergoing ERAS use 30–60% less opioids after surgery than those undergoing conventional care (Fay et al., 2019; Miralpeix et al., 2016). This is accomplished by the use of planned acetaminophen and non-steroidal anti-inflammatory medications (NSAIDs), regional anesthetic techniques such as transverse abdominis plane (TAP) blocks, and infiltration of the wound with a long-acting local anesthetic. Importantly, there was no clear association in most studies reviewed between increased pain scores and reduced opioid use in the ERAS cohorts, suggesting that opioids are not a prerequisite for good surgical pain control.

### **2.3.3 Complication Rates and Readmission**

In addition to LOS, ERAS protocols have shown a significant decrease in certain postoperative complications. Surgical site infection (SSI) rates are lower in ERAS cohorts, possibly due to better normoglycemia, normothermia, and early mobilization, which decrease venous stasis (Miralpeix et al., 2016). Historically, postoperative ileus has been a major factor in prolonged hospital stays after pelvic surgery; early oral feeding and ambulation advocated by ERAS greatly reduce the impact of this complication (Nelson et al., 2016). A common element in ERAS is venous thromboembolism (VTE) prophylaxis, which helps reduce the incidence of deep vein thrombosis (DVT) and pulmonary embolus (PE) rates when compared with historical controls. The 30-day readmission rates in ERAS cohorts were in the range of 2–8% in the literature reviewed, which is similar to or lower than the conventional care rates [10].

### **2.3.4 Patient-Reported Quality of Recovery**

Patient-centered outcome measurement has become a key addition to ERAS assessment. The 15-item patient-reported validated instrument for measuring pain, physical comfort, emotional status, psychological support, and independence, the Quality of Recovery-15 (QoR-15), has been increasingly used in gynecological ERAS studies. Patients who underwent management with the ERAS protocol had significantly improved QoR-15 scores at 24 and 48 h postoperatively, reflecting better subjective recovery experiences (Stark et al., 2013). Patient-reported outcomes also include a decrease in the severity of nausea and vomiting, an earlier return to functional independence, and a higher satisfaction with the surgical experience. These findings are not by chance but rather reflect nursing's major ethical responsibility for the comfort of patients within the framework of nursing comfort.

### **2.3.5 Cost-Effectiveness**

ERAS savings have consistently been shown to be meaningful at both institutional and health system levels. In the U.S. context, the benefits of reduced LOS, decreased rate of complications requiring intervention, reduced ICU use, and reduced opioid-related pharmacy costs would yield per-case savings of USD 2,000–USD 7,000 (Kalogera et al., 2013; Fay et al., 2019). This represents significant savings in today's value-based care payment environment, where hospital systems are rewarded for minimizing avoidable complications and maximizing resource utilization [11].

## **2.4 Gaps in the Current Evidence Base**

Even with the available evidence, several important areas need to be addressed to implement the findings of ERAS research in every gynecological nursing practice. First, most existing studies were conducted in academic medical centers and centers with dedicated ERAS implementation teams and resources, making it difficult to extrapolate the findings to community hospitals, rural, and low-resource settings. Second, racial and ethnic minority patients, non-English speakers, and uninsured individuals are systematically under-represented in ERAS trial populations, which could signal inequities in the availability of benefits. Third, there is a lack of 30-day follow-up outcomes; it is unclear whether ERAS benefits in the short term will benefit these patients in the long term in terms of quality of life, functional status, or psychological outcomes. Fourth, and most pertinent to the topic of this study, there is little evidence in the literature of competency frameworks specific to nursing for the implementation of ERAS, a striking absence given the nurses' known critical role in the outcomes of the protocol [12].

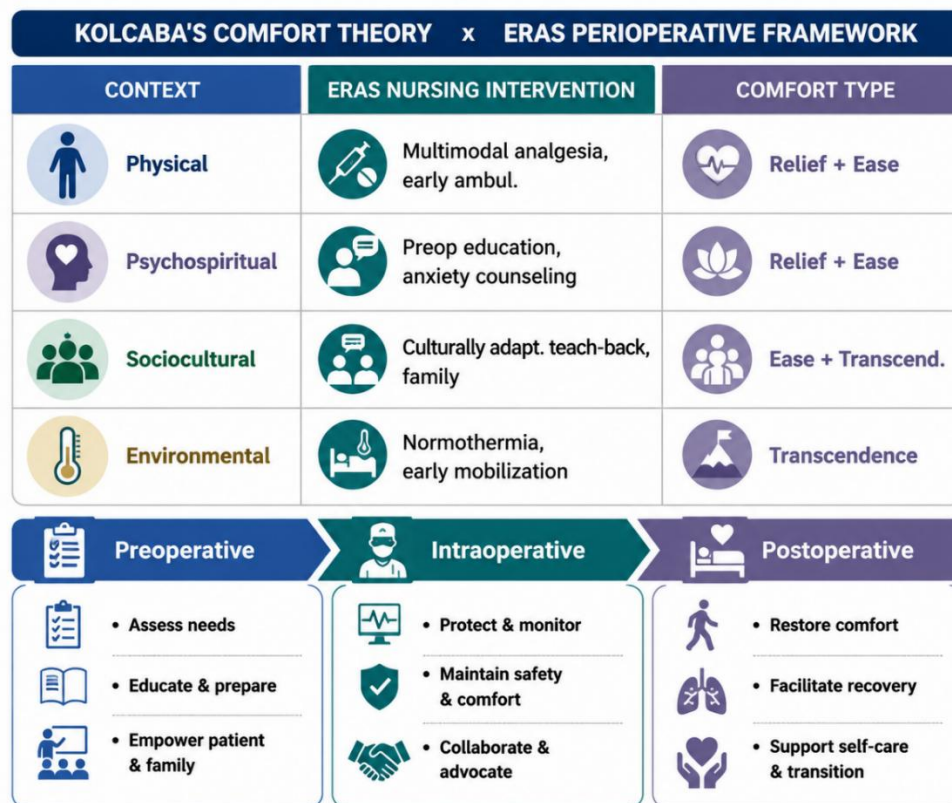
### 3. THEORETICAL FRAMEWORK

#### 3.1 Kolcaba's Theory of Comfort

This review was guided by Katharine Kolcaba's Theory of Comfort. The theory was first published in 1994 and has been expanded in later monographs. It posits that the main role of nursing is to assess patient needs for comfort, design and implement comfort measures, and evaluate whether the measures have resulted in a state of comfort, broadly defined as the condition of having needs for relief, ease, and transcendence met within the physical, psychospiritual, sociocultural, and environmental contexts (Kolcaba, 2003).

These three types of comfort are particularly relevant to ERAS nursing practice. Relief is the satisfaction or resolution of discomfort; pain is eased, nausea is gone, and anxiety is addressed. Ease is a feeling of ease or contentment that occurs when patients feel well-informed, safe, and supported and do not experience distress. Transcendence is a level of comfort that exceeds the original, where the patient transcends their difficulties; for example, a patient who, after major surgery, begins to walk in several hours, starts to eat by mouth, and asserts agency in the healing process. If carried out faithfully, ERAS programs provide opportunities for all three types of comfort in each of the four contexts [13].

Multimodal analgesia and early mobilization have a physical effect of minimizing pain and restoring physiological functions. Psychospiritually, preoperative education and counselling reduce anxieties, fear, and uncertainty. Socioculturally, culturally competent patient education and family engagement recognize the social aspects of illness and healing. Warm surgical environments, minimizing pointless procedures such as routine bowel preparation and NG tubes, and getting up and around from institutional areas restore a sense of normalcy and personal autonomy. This theoretical mapping is illustrated in Figure 1.



**Figure 1.** Conceptual mapping of Kolcaba's Theory of Comfort types and contexts onto ERAS nursing practice across the perioperative continuum.

Applying Kolcaba's framework to ERAS implementation shifts the analytic question from 'What does ERAS do to surgical outcomes?' to 'How do nurses operationalize comfort to achieve those outcomes?' This reframing elevates nursing agency from protocol compliance to professional practice and provides a theoretical basis for investing in nursing-specific ERAS competencies, education, and leadership roles.

### 4. NURSES' ROLE IN IMPLEMENTATION OF ERAS

#### 4.1 Patient Education and Shared Decision-Making

An informed patient is key to a successful ERAS program. Patients who know why carbohydrate loading is needed (before surgery), why bowel preparation is not necessary (routinely), why they should get up and move around (early ambulation), and why they are to receive multimodal pain control (before surgery) are more likely to follow protocol-driven behaviors in the

postoperative period (Ljungqvist et al., 2017). This learning experience is primarily the responsibility of nurses in preoperative assessment clinics. Studies have shown that teach-back—in which patients are asked to restate the information they have received—can significantly improve patients' retention of information compared with didactic teaching alone (Tamura-Lis, 2013) [14].

#### **4.2 Preoperative Assessment and Risk Stratification**

Fasting for surgery is a cultural norm in some communities, and there is a certain level of distrust of biomedical institutions that may be rooted in the historical trauma. In other communities, literacy is limited, and written information is not easily understood; therefore, these patients require personalized educational strategies. Nurses should actively evaluate cultural health beliefs, use professional interpreters when needed, and adjust the information presented in ERAS educational materials as needed. The lack of consideration of these dimensions further undermines protocol adherence and contributes to systemic inequities in surgical outcomes [15].

#### **4.3 Preoperative Assessment and Risk Stratification**

Patient-specific factors that may alter the application of ERAS are identified through a thorough preoperative assessment. Nutritional status should be particularly analyzed, as malnutrition is a known risk factor for postoperative complications and is particularly relevant in patients with gynecological oncology, who are highly prone to nutritional depletion caused by disease and previous chemotherapy. Treatment should be based on the Malnutrition Universal Screening Tool (MUST) or the Nutritional Risk Screening 2002 (NRS-2002), as this should be completed at the first nursing contact, and those at risk should be referred to the dietetic service for prehabilitation nutritional support (Weimann et al., 2017). Other aspects that the preoperative nurse evaluates are cardiopulmonary functional capacity, coagulation status, chronic pain history, current opioid use, and psychosocial support systems to tailor the ERAS application to the individual patient and identify those who may benefit from a more thorough examination of their pathway and/or modifications to the protocol [16].

#### **4.4 Prehabilitation Support**

Optimization of physical and psychological fitness prior to surgery (prehabilitation) is a newly emerging ERAS element that is relevant for certain complex gynecological and cancer surgeries. The scope of nursing involvement in prehabilitation includes offering patients advice on exercise before surgery, helping patients quit smoking and alcohol consumption, and arranging access to physiotherapy, social work, or specialist nursing services. Patients with optimized function prior to surgery have a faster recovery trajectory, shorter hospital stay, and better QRS (Minnella et al., 2018).

### **5. INTRAOPERATIVE NURSING RESPONSIBILITIES**

#### **5.1 Normothermia Maintenance**

Perioperative hypothermia (core body temperature < 36 °C) increases the risk of surgical site infection, affects coagulation, delays emergence from anesthesia, and causes immediate postoperative discomfort in patients. The ERAS guidelines recommend active warming measures during the intraoperative and recovery periods to prevent hypothermia. The circulating and scrub nurses are responsible for starting the forced-air warming devices before surgical preparation, having warmed IV and irrigation fluids on hand, and recording the temperature monitored at regular intervals. Nursing-driven normothermia interventions alone can lower the risk of SSI by as much as 64% in patients who undergo abdominal surgery (Kurz et al., 1996; Yi et al., 2017) [17].

#### **5.2 Fluid Management and Hemodynamic Collaboration**

Goal-directed fluid therapy (GDFT) is a change from the old doctrine of liberal intraoperative fluid administration. GDFT allows the titration of fluid for hemodynamic parameters set against minimally invasive cardiac output (CO) monitoring and minimizes hypovolemia-associated organ hypoperfusion and hypervolemia-associated bowel edema, the latter being one of the leading causes of postoperative ileus. In GDFT, perioperative nurses work alongside the anesthesiologist to accurately record fluid balance, provide a report on fluid output, and warn about any deviations from the target variables in the patient's hemodynamics. The role of collaborative monitoring requires clinical acumen and assertiveness in communication skills, which are part of the enlarged scope of the advanced practice perioperative nurse.

#### **5.3 Surgical Positioning and Skin Integrity**

Lithotomy positioning is associated with well-known risks of lower extremity compartment syndrome, common peroneal nerve palsy, and bony prominences such as the sacrum, heels, and lateral fibular head. Scrub and circulating nurses are directly responsible for evidence-based padding protocols, positioning adjustments during extended procedures, and post-repositioning neurovascular assessments. Positioning interventions can be documented, which will not only facilitate continuity of care but

also meet medicolegal requirements in high-risk situations. Position-related complications (if they occur) are preventable, nursing-sensitive adverse events [18].

## **6. Postoperative Nursing Responsibilities**

### **6.1 Assessment of Pain and Multimodal Analgesia**

Nurses need to change the pattern of 'wait and ask' when prescribing opioids in the postoperative setting to the proactive, planned delivery of a multimodal approach to pain management under ERAS. Regular assessments of nursing pain should be performed using validated instruments, such as the Numeric Rating Scale for communicative patients or the Critical-Care Pain Observation Tool (CPOT) for patients who cannot self-report their pain, which are coordinated with medication orders and ERAS order sets. Medications prescribed for the treatment of acetaminophen, NSAIDs, and other medications (e.g., gabapentinoids) should be administered as scheduled and not delayed. If supplementation with opioids is required, nurses use the Pasero Opioid-Induced Sedation Scale (POSS) to determine the level of sedation and adjust as needed, referring to the provider if there is any pain that remains uncontrolled or adverse effects occur. Nurses' advocacy efforts in opioid stewardship, including the ability to provide accurate patient pain scores, enabling timely adjustments to analgesics, and educating patients about non-pharmacological measures for comfort, are deeply intertwined with ERAS success [19].

### **6.2 Early Ambulation Facilitation**

The change in philosophy reflected in ERAS postoperative elements is most evident in early mobilization. Asking patients to sit up and stand soon after major pelvic surgery can challenge strongly entrenched nursing beliefs about the vulnerability of patients and the fear of injuring them. Indeed, there is strong evidence supporting this practice: early mobilization decreases the risk of VTE, decreases the effects of immobility on metabolism and respiration, restores bowel motility, and enhances the psychological well-being of patients by restoring their sense of agency (Wijk et al., 2019). Nurses can encourage early ambulation by collaborating with physical therapists, managing intravenous and urinary catheter placement to reduce barriers to ambulation, performing fall-risk evaluations, using assistive devices as needed, and employing therapeutic communication to normalize and encourage ambulation. The goal-guided approach to ambulation (typically a chair transfer targeted at 2 h and the first walk at 4 h post-extubation) provides clear and measurable targets for the nursing staff, but not subjective thresholds that can vary from person to person [20].

### **6.3 Early nutritional support and prevention of postoperative nausea and vomiting (PONV).**

One of the pillars of ERAS gut rehabilitation is the early resumption of oral feeding. Oral fluid advancement is started by postoperative nurses following protocol-specified timelines and according to the nature of the fluids, not according to order-by-order prescriptions by the surgeon. The use of validated scales to monitor postoperative nausea and vomiting (PONV) helps ensure prompt delivery of effective antiemetics, avoid aspiration, and eliminate a major reason for slow progression of oral intake. Those who develop untreated PONV are far less likely to achieve early feeding goals, and nurses' documentation of the assessment of nausea serves as an evidence-based record for protocol refinement and quality improvement.

### **6.4 Catheter and Drain Management**

Urinary catheter-associated urinary tract infections (CAUTI) are among the most common healthcare-associated infections (HAIs) in surgical patients, and the most common modifiable risk factor is the duration of urinary catheterization. Nursing monitoring for urinary retention and measurement of post-void residual volumes (PVR) when clinically indicated, are required. ERAS protocols include early catheter removal, which is set at 6–12 h postoperatively for most gynecologic surgeries. Removing the catheter at the appropriate time also removes a major barrier to ambulation, helping to ensure adherence to early mobilization goals. Where surgical drains are placed, they must be systematically assessed for their output characteristics and volume, and escalation must be clearly defined in ERAS order sets to assist with early removal [21].

### **6.5 Discharge Planning and Transitional Care**

The hospital-based discharge preparation window is compressed by ERAS-associated LOS reduction, thus increasing the demands for nursing in the transitional process. Discharge education should begin at the preoperative assessment time point, not at the end of the hospital stay. Patients should be able to communicate warning signs for return to the emergency department, have a clear understanding of their pain medication, be aware of who they can contact if they are concerned, and have post-discharge arrangements for functional support. Patient navigation, a nurse coordinator who follows up with patients via phone after their discharge, has been shown to lower preventable hospital readmissions and emergency department use in the ERAS population (Fay et al., 2019). Advanced practice nurses, especially those with perioperative experience, such as clinical nurse specialists and nurse practitioners, are well suited to assume leadership of these transitional care functions.

**7. BARRIERS TO ERAS IMPLEMENTATION IN NURSING PRACTICE**

It is important to understand the benefits of evidence-based ERAS protocols, as well as the reasons for their inconsistent implementation. The barriers identified in implementation science research are at the institutional, professional, and patient levels, and all three are crucial for the effective integration of ERAS.

**7.1 Institutional and Systemic Barriers**

Perhaps most significantly, standardized ERAS order sets have not been integrated into nursing workflows. Nurses do not have explicit support for the autonomous use of ERAS protocols when these protocols are only surgical order sets (not including nursing actions, triggers, or documentation prompts). EHRs with multiple screens or workarounds to document ERAS compliance metrics create inefficiencies that, especially in low-staff environments, directly correlate with reduced protocol adherence by the nurses. Low nurse-to-patient ratios negatively impact the time available for comprehensive patient education, early mobilization assistance, and evaluation work required by the ERAS protocol. The allocation of a dedicated ERAS nurse coordinator position, which has been shown to enhance compliance and results, is inconsistent across institutions [22].

**7.2 Educational and Knowledge Deficits**

Knowledge deficits regarding the evidence-based components of ERAS have been identified in perioperative care nurses in all surveys conducted to date (Alawadi et al., 2016). For instance, if nurses are not familiar with the physiological basis for carbohydrate loading, they may revert to the traditional NPO from midnight advice in case they are wrong. Untrained nurses may not remove urinary catheters because they fear the extra work of monitoring post-void residual urine. This is exacerbated by the diversity in the content of the ERAs in pre-licensure nursing programmes; in some, there are not enough dedicated teaching hours for the perioperative nursing aspect. Continuing professional development programs on ERAS fundamentals are offered by professional organizations, such as AORN and AWHONN, but are limited in scope to only a small proportion of practicing perioperative nurses.

**7.3 Attitudinal and Interprofessional Barriers**

Studies on implementation science have established that clinician attitudes or beliefs, mainly conscious but also implicit heuristics, are strong factors influencing guideline uptake. There is a clear example of hierarchical communication inhibition in surgical teams (Makary et al., 2006), with nursing professionals being discouraged from being assertive when commenting on the surgeon's and/or anesthesiologist 's adherence to ERAS. If a nurse is unable to challenge instructions that are not evidence-based, do not fall within them, or from within their institution, consistent with ERAS protocols, it is a failure of interprofessional education and culture, and not a personal failing. Likewise, surgery and anesthesia practitioners who do not want protocol-based practice as a violation of clinical freedom need specific training in implementation science and in shared governance principles.

**7.4 Patient-Level Barriers**

Some barriers to ERAS were not present in the clinical teams. Patients come to surgery with prior beliefs, culture, and health literacy, which influence their interactions with ERAS elements. Patients who have undergone surgery in the past, following the traditional recovery course, might be reluctant to resume walking or eating early because this conflicts with their experiential knowledge of recovery after surgery. Limited health literacy impacts the understanding of written information on the ERAS. Social factors that impact health, such as unstable housing, social support, and lack of transportation to follow-up appointments, can negatively affect post-discharge recovery adherence, even if the ERAS is well executed in the hospital. Nurses are in a unique position as their main role is that of patient educators and advocates; they should systematically evaluate these barriers and not assume that every patient is ready to participate in the program [23].

**Table 3: Barriers to ERAS Implementation and Evidence-Based Facilitators**

<b>Barrier</b>	<b>Level</b>	<b>Facilitator / Mitigation Strategy</b>
Absent ERAS nursing order sets	Institutional	EHR-integrated ERAS decision support tools with nursing-specific triggers
Staffing constraints	Institutional	Dedicated ERAS nurse coordinator / champion role
Knowledge deficit re: ERAS rationale	Professional	Simulation-based training; AORN/AWHONN continuing education modules
Hierarchical communication inhibition	Interprofessional	SBAR communication training; psychological safety culture programs
Surgeon resistance to protocol	Interprofessional	Multidisciplinary ERAS committee; shared outcome data dashboards
Health literacy limitations	Patient	Visual/pictographic ERAS materials; teach-back methodology

Cultural fasting beliefs	Patient	Cultural humility training; individualized education planning
Inadequate social support post-discharge	Patient	Social work integration; post-discharge nurse telephone follow-up
Prior surgery experience (conventional)	Patient	Expectation-setting in preoperative education; peer patient testimonials

**Note.** SBAR = Situation-Background-Assessment-Recommendation communication framework. AORN: Association of Perioperative Registered Nurses. AWHONN: Association of Women's Health, Obstetric, and Neonatal Nurses.

## 8. STRATEGIES FOR SUSTAINABLE ERAS INTEGRATION

### 8.1 Multidisciplinary Governance and Nurse Leadership

The governance structure of an ERAS program always includes nursing in the process of protocol design and not simply protocol implementation. A multidisciplinary ERAS committee, including members from surgery, anesthesiology, nursing, clinical pharmacy, registered dietitians, physical therapy, and patient representatives, allows the collaborative framework needed for comprehensive protocol development and iterative refinement. In this framework, the role of the ERAS nurse champion/coordinator (ENC) – a nurse with high levels of perioperative knowledge, communication, and organizational authority – has been identified as a key success factor in implementation research (Ljungqvist et al., 2017). The ERAS nurse champion is the "glue" that holds the surgery team's ERAS intentions together and brings them to the bedside as a patient advocate, protocol educator, compliance monitor, and interdisciplinary liaison.

### 8.2 Education, Simulation, and Competency Development

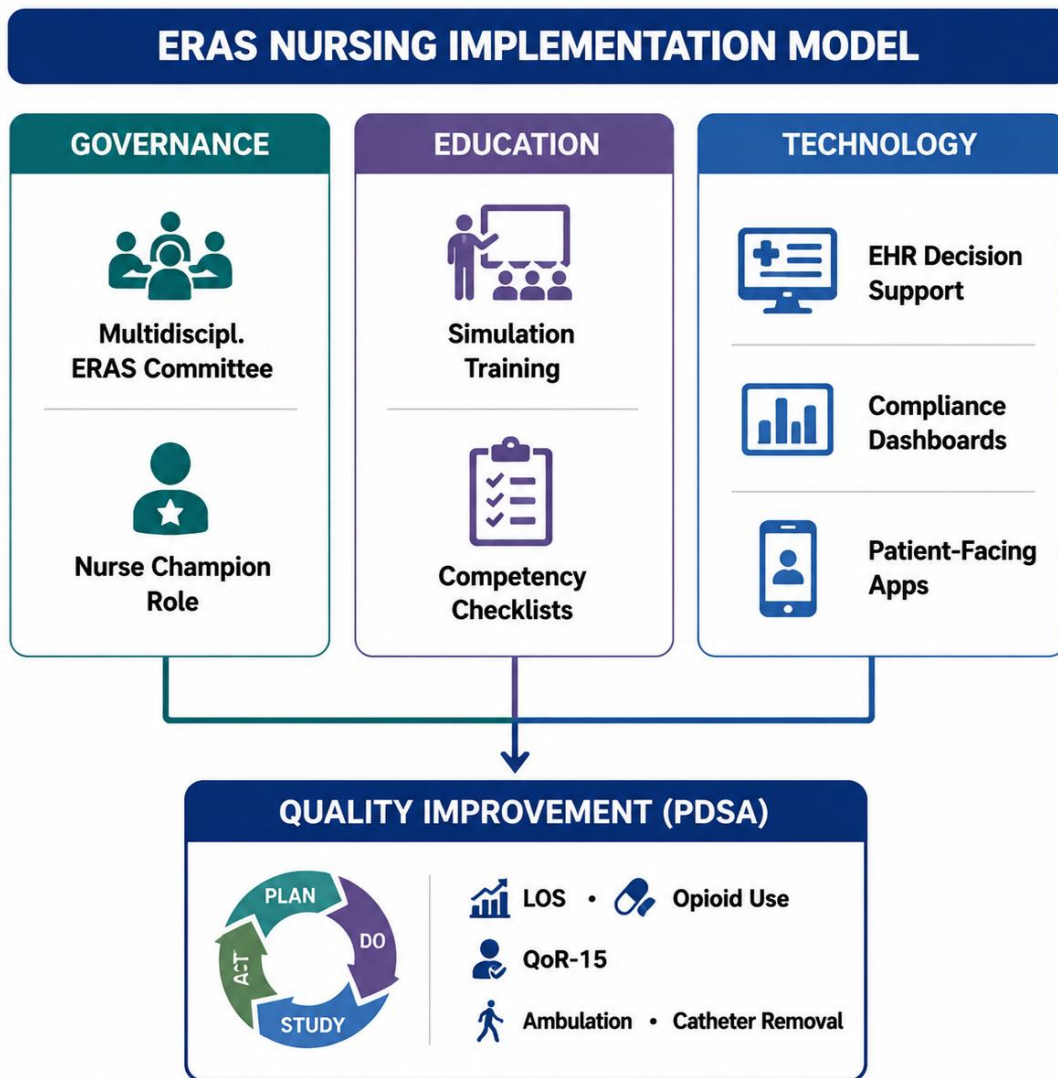
There are gaps in the knowledge of perioperative nurses; therefore, systematic ERAS education programmes are a requirement for successful implementation and not an add-on. Simulation-based learning or the use of standardized patient scenarios with complexity similar to that experienced in the ERAS patient encounter offers learning opportunities that are not present in a didactic setting. Examples of simulation scenarios include a postoperative day 0 scenario in which the nurse is tasked with early ambulation of the patient, who is opioid-sedated and reluctant to do so; a preoperative education scenario with a patient who has conflicting cultural beliefs about carbohydrate loading; or an interprofessional communication scenario in which the nurse must advocate for the removal of the catheter while the surgeon is hesitant. Competency checklists have return demonstration requirements that offer measurable individual nurse ERAS readiness assessments. Regarding ERAS, AORN's Perioperative Standards and Recommended Practices cover normothermia, positioning, and infection prevention. AWHONN's evidence-based clinical resources have a nursing-specific focus on women's surgical health. Institutional education programmes should align with these professional frameworks to ensure consistency with national standards and address site-specific nuances in protocols.

### 8.3 Technology, Documentation, and Quality Intelligence

The EHR is an underused, powerful strategy for actively using it as an implementation tool for ERAS and not a passive documentation platform. Clinical decision support alerts embedded in the EHR can remind nurses to encourage early ambulation at the right time postoperatively, follow up on delayed removal of the catheter, or alert providers if pain scores are not controlled after pain medication is administered. A real-time ERAS compliance dashboard, available to unit nursing leadership and individual nurses, delivers the feedback needed to ensure continual learning and self-correction. Patient engagement is fostered pre-admission and post-discharge via patient-facing digital tools, including mobile apps with ERAS preparation advice, tracking patient progress through recovery milestones, and direct communication with nursing teams.

### 8.4 Quality Improvement Infrastructure

Making sustainable ERAS a reality will require more than a time-limited project and will require it to become ingrained in an institutional quality improvement (QI) culture. The Plan-Do-Study-Act (PDSA) cycle is a methodical framework that enables the iterative refinement of ERAS through the analysis of compliance data and outcome measures, followed by the implementation of protocol changes in a carefully selected patient population, study of the impact on key performance indicators, and adoption, adaptation, or rejection of the change based on the findings. Important KPIs for gynecological ERAS QI include process indicators (percentage of patients receiving preoperative education, percentage of patients with postoperative catheter removed within protocol time frame, early ambulation compliance rates, etc.) and outcome indicators (length of stay [LOS], 30-day readmission rate, PONV rate, opioid consumption, QoR-15 scores, etc.). Benchmarking with the ERAS Society international registry provides an external reference standard to put institutional performance in perspective concerning literature.



**Figure 2.** Conceptual model depicting the convergence of the three pillars of ERAS nursing implementation (governance, education, and technology) through quality improvement for patient-centered outcomes.

## 9. SPECIAL CONSIDERATIONS IN GYNECOLOGIC ONCOLOGY

### 9.1 Clinical Complexity and Physiological Vulnerability

Patients with gynecologic cancer who undergo surgery have an overall different physiological profile than those who undergo surgery for benign conditions do. Cytoreductive surgery is the paradigm case for ovarian cancer and can be much longer (often more than 6 h), may require bowel surgery, peritonectomy, and stripping of the diaphragm, and may create a surgical stress response that is significantly more severe than that caused by laparoscopic fibroid hysterectomy. Neoadjuvant chemotherapy reduces immunity, disrupts coagulation, and can cause peripheral neuropathy and nutritional deficiencies, which can interfere with the ability to ambulate early after the surgery. These factors necessitate the specific development of ERAS protocols in gynecologic oncology rather than the simple translation of ERAS protocols used in benign gynecologic settings.

Despite these challenges, ERAS has significantly improved outcomes in gynecologic oncology. Modesitt et al. (2016) found that the median LOS decreased from 6.3 to 3.5 days after implementing ERAS for open debulking procedures without any increase in complication or 30-day readmission rates. In this context, perioperative nursing is a more critical process, requiring a greater level of attention, such as postoperative assessment for changes in hemostasis, increased surveillance of anastomotic leakage in bowel-involving patients, complex postoperative pain management (including regional catheter management), and increased risk for PONV due to long duration of opioid use in the immediate perioperative period.

### 9.2 Psycho-Oncological Integration

The psychological significance of a gynecologic cancer diagnosis is profound and extends beyond the encounter with surgery. Patients facing ovarian, cervical, or endometrial cancer simultaneously face existential threats, disruption of body image, fertility concerns, relationship stressors, and uncertainty surrounding the prognosis of cancer. Nurses working in oncology settings within an ERAS framework should incorporate psycho-oncological support into the delivery of their preoperative and postoperative care, rather than leaving psychological issues to be addressed during other specialist meetings. In the perioperative setting, screenings for anxiety and depression using validated assessment tools, such as the Hospital Anxiety and Depression Scale (HADS), provision of information about psychological support resources, and communication that creates space for patients to express fears and questions are within the scope of nursing and have been shown to impact ERAS engagement.

The development of a survivorship care plan, the formalization of a plan to maintain patients' health after treatment that includes surveillance, late effects, rehabilitation, and psychosocial issues, should occur during the perioperative nursing encounter, not during an oncology clinic follow-up visit weeks after the treatment. Nurses who set up the ERAS recovery pathway as the first step in a longer treatment and recovery journey can help patients feel that they are progressing in a meaningful direction.

### **9.3 Fertility-Sparing Considerations**

An increasing number of patients with gynecologic cancers are undergoing procedures that help maintain uterine and ovarian function, such as cone biopsy, trachelectomy, unilateral salpingo-oophorectomy, and conservative staging. These patients are at risk for psychological issues related to surgery involving reproductive function, relationships, and/or identity. The counseling aspect of nursing is not only ERAS protocol education but also the gentle exploration of any anxieties around fertility, communication with any reproductive medicine specialists when relevant, and recording of any patient-expressed reproductive preferences to ensure consistency of care throughout the perioperative team.

## **10. ETHICAL CONSIDERATIONS**

### **10.1 Informed Consent and Patient Autonomy**

ERAS protocols create tension between standardization and individualization, with ethical implications that require nurses' clear attention. By design, protocols are population interventions that benefit the population through consistent application; however, patient autonomy compels individual patients to have the right to refuse parts of the protocol if their choices differ from the default. If a patient refuses to follow the carbohydrate loading diet because of religious beliefs, requests more opioids than the protocol calls for, or is not prepared to start walking at the scheduled time, the nurse is not obligated to force the patient to eat the food, nor is he or she required to skip the scheduled walk.

Participation in ERAS should be incorporated into the informed consent process and not simply be a box to be ticked on a conventional surgical consent form. Nurses who provide clear information about the rationale for ERAS, discuss how the components might change based on the patient's response, and solicit questions and concerns demonstrate informed consent, both in terms of procedural and substantive aspects of the process, as outlined in nursing ethics frameworks.

### **10.2 Health Equity and Access to ERAS**

Improving ERAS outcomes is beneficial, but the benefits are unevenly distributed among those with good health literacy, social support, English language proficiency, and well-resourced institutions. The dissemination of ERAS that is not implemented with equity can be regarded as a mechanism for amplifying health disparities. Existing data indicate that there are racial and ethnic inequities regarding access to and outcomes from ERAS; Black and Hispanic patients are less likely to be enrolled in ERAS protocols, even if pathways are available, and the ERAS outcomes literature for these groups is limited (Fay et al., 2019).

Nursing's ethical obligation is not just to the individual patient, but to the role of advocacy, which calls for designing ERAS protocols with equity as a design principle, having educational materials in multiple languages, and having the support given after discharge designed with the social determinants of health that impact recovery in the community in mind.

### **10.3 Data Ethics and Quality Improvement Research**

An increasing amount of monitoring is being digitized in ERAS, for example, via compliance dashboards for EHRs, patient-reported outcome platforms, and post-discharge mobile applications, producing patient data that benefit secondary research and improve quality. The person entering and interpreting such data should be aware that such data entry constitutes either quality improvement or research and should request a full IRB review for the latter. The use of outcome data for institutional quality monitoring or in published case series should be explained to the patients. Digital consent processes embedded within ERAS platforms for patients could provide a scalable and patient-centered approach to address these obligations.

## **11. IMPLICATIONS FOR NURSING PRACTICE, EDUCATION AND POLICY**

### **11.1 Clinical Practice**

The call for the integration of the ERAS protocol into nursing practice in gynecology is a professional imperative, not an institutional preference, as established in this review. The available evidence for ERAS is adequate, and the failure to include ERAS in perioperative nursing care is not evidence-based practice standards. At the bedside, nurses need to have essential ERAS skills as part of their perioperative nursing practice and not as specific skills to be assigned to ERAS teams. Institutional nursing leaders are responsible for ensuring that all new perioperative nurses participate in orientation programs that include ERAS nursing competencies and develop practice environments where nurses feel empowered to speak up for the implementation of the protocol.

Advanced practice nurses, clinical nurse specialists from the perioperative arena, and nurse practitioners from surgical oncology have special roles in the development of ERAS programs, training of nurse champions, review of protocol outcomes, and interpretation of new evidence to inform new clinical guidelines. The growing acceptance of APRN's perioperative roles is well aligned with the structural needs for implementing sustainable ERAS.

### **11.2 Nursing Education**

ERAS content must be included in pre-licensure nursing programs and integrated into perioperative modules in a manner that is appropriate, with a proportional relationship to the clinical significance of the content. Surgical nursing curricula that still exist, which teach conventional surgical nursing and do not contain any ERAS content, produce students with inadequate preparation for today's surgical settings. In addition to content incorporation, pedagogical methods are also important. Case-based learning scenarios, simulation encounters, and interprofessional education exercises that simulate the decision-making requirements of ERAS protocol execution help enhance clinical reasoning skills that cannot be achieved through knowledge transfer alone.

Nurse anesthesia, clinical nurse specialist, and nurse practitioner programs should provide medical content that includes ERAS at the graduate level in surgical and women's health courses. The competency gaps, inequities, and questions along the continuum of outcomes that emerged from this review should be actively pursued with nursing-led ERAS research by doctoral programs, including the Doctor of Nursing Practice (DNP) and Doctor of Philosophy (PhD).

### **11.3 Health Policy**

Nursing organizations have the greatest potential to influence ERAS adoption and quality at the systemic level by engaging in policy. The ANA, AWHONN, AORN, and Oncology Nursing Society represent a powerful infrastructure of policy advocacy to be put in place in support of ERAS-related legislative and regulatory priorities. They encompass advocacy for value-based care reimbursement models that include the cost of implementing ERAS and the improvement of outcomes, investment in the nursing workforce to hire nurse champions and nurse coordinators, incorporation of health equity priorities in ERAS certification requirements, and participation in international ERAS guideline development processes to ensure that the nursing voice is heard. From an international perspective, the ERAS Society guidelines are consistent with the International Council of Nurses' framework for nursing practice standards, providing an opportunity to set international standards for the role of nurses in the delivery of ERAS in surgery. This is especially pertinent to the health systems in low- and middle-income countries, where surgical morbidity may be significantly reduced with relatively low investment in resources if ERAS is adopted.

## **12. CONCLUSION**

ERAPs are one of the most important evidence-based changes in perioperative management in the last 30 years. In gynecology, it has proven to have a remarkable clinical, patient experience, and economic impact on patients, providers, and the healthcare system. This integrative review has shown that consistent ERAS protocol implementation can be associated with reduced length of hospital stay, opioid use, complication rates, and healthcare costs, and that nurses are not executing change but are key architects of change at the bedside. Drawing on Kolcaba's Theory of Comfort, this analysis sheds light on how ERAS nursing practice goes beyond merely complying with technical protocols and delivers on the deepest professional commitments of nursing: comforting physical suffering, providing psychological ease, and facilitating the patient's transcendence -- the ability to rise above the surgical experience toward recovery, function, and the ability to determine the quality of their life. Each act of comfort care, from the fluid drink the patient is given before surgery to the walk with the nurse four hours after the patient's surgery, is a clinical outcome with measurable consequences. However, significant barriers remain. Deliberate, evidence-informed responses are needed to address knowledge gaps, hierarchical communication cultures, insufficient institutional infrastructure, and racial, socioeconomic, and geographic disparities in ERAS benefits. The facilitator strategies identified in this review (nurse champion models, simulation-based education, EHR integration, multidisciplinary governance, and equity-centered protocol design) offer a concrete roadmap that institutions can follow to bridge the ERAS evidence-ERAS practice chasm. Future studies should focus on developing and psychometrically validating a nursing-specific ERAS competency instrument, nurse champion model randomized controlled trials that investigate the independent effect of nurse champion models on ERAS outcomes, longitudinal studies to investigate patient outcomes beyond 30 days, and health equity research that investigates

outcomes of ERAS with populations historically underrepresented in surgical outcomes research. This agenda is not an academic one, but rather the research infrastructure that will enable nursing to truly be part of the new frontier in perioperative patient care. This integrative review had certain limitations. Most studies were conducted in academic medical centers, making it difficult to generalize the findings to community and rural hospital settings. Publication bias may lead to an over-representation of good ERAS implementation results because negative results are not always submitted or accepted for publication. It is difficult to directly compare the results from the literature reviewed because of the differences in the components of the ERAS protocol, methods for measuring outcomes, and study designs. Furthermore, although the review revealed the benefits of ERAS, it was not possible to separate the individual nursing actions' contribution to the composite outcomes from the current evidence base.

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**Jawad Karim** is an International Foundation Year (IFY) student under NCUK at MIE Pathways, Chattogram, Bangladesh, with a strong passion for occupational therapy and health care. He completed his O Levels and is currently preparing for higher studies in occupational therapy while building a strong foundation in health sciences, rehabilitation, patient care, and therapeutic support. His interests include occupational therapy, rehabilitation, mental health, developmental challenges, disability support, patient-centered care and community health. Through his academic work, he aims to explore how occupational therapy can help individuals overcome physical, mental, and developmental challenges, achieve greater independence, and improve their quality of life. Alongside their studies, they continue to develop skills in communication, empathy, critical thinking, research and problem-solving. He hopes to pursue occupational therapy professionally and contribute to compassionate, inclusive, and evidence-based healthcare practices.



**Dr. Moshammat Zebunnesa**, MBBS, FCPS (Obs. & Gynae), MS, is an Associate Professor, Obstetrician and Gynecologist, Laparoscopic and Hysteroscopic Surgeon, and Infertility Specialist. She currently serves as the Head of the Department of Obstetrics and Gynecology at Cox's Bazar Medical College in Bangladesh. With more than 2.5 decades of clinical, academic, and leadership experience, her expertise includes gynecologic surgery, infertility management, in vitro fertilization (IVF), obstetric ultrasonography, and advanced laparoscopic and hysteroscopic procedures. She has received advanced training in infertility, obstetrics, and gynecology in India and the United Kingdom. Her academic and clinical contributions have focused on women's health, medical education, gynecological research, and infertility care.



**Professor Dr. Mohammad Masud Karim** is a distinguished academic surgeon in Bangladesh who currently serves as the Head of the Department of Surgery at Chittagong Medical College and the Dean of the Faculty of Surgery at Chittagong Medical University. He is widely recognized for his contributions to hepatobiliary, pancreatic, colorectal, and gastrointestinal oncology, and minimally accessible surgery. A Gold Medalist in MBBS, he earned FCPS in Surgery from the Bangladesh College of Physicians and Surgeons and FRCS, followed by advanced international fellowships in hepatobiliary and transplant surgery from Singapore, minimal access surgery from India, and colorectal surgery from the Tulane University Hospital, USA. With more than two and a half decades of clinical, academic, and leadership

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