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Enhancing Surgical Patient Recovery Through Mental Health Nursing Interventions: A Comprehensive Approach in Adult, Obstetric & Gynecological, and Pediatric Surgical Care

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ABSTRACT: Background: Surgical procedures represent profound physiological and psychological stressors. Perioperative distress—characterized by anxiety, depressive symptoms, acute trauma, and catastrophizing—provokes neuroendocrine and autonomic dysregulation that impairs wound healing, elevates anesthetic requirements, exacerbates postoperative pain, prolongs hospital stays, and increases readmission rates. While Enhanced Recovery After Surgery (ERAS) protocols have revolutionized somatic surgical management, systematic perioperative mental health nursing interventions remain inconsistently integrated across clinical specialties.

Objective: To synthesize the evidence regarding nurse-led psychological and mental health interventions in perioperative care, delineating population-specific mechanisms, operational workflows, and clinical outcomes across adult, obstetric and gynecological, and pediatric surgical cohorts.

Methods: A comprehensive critical review was conducted across electronic databases (PubMed/MEDLINE, CINAHL, PsycINFO, Scopus, Cochrane Library) examining nurse-led and multidisciplinary perioperative mental health interventions published through recent updates. Studies focusing on psychoeducation, cognitive-behavioral strategies, mindfulness, expressive arts, biofeedback, therapeutic play, and parental dyadic support were synthesized.

Key Findings: Preoperative psychological distress affects 40% to 80% of surgical patients across demographics. In adult surgical populations, nurse-led cognitive reframing,

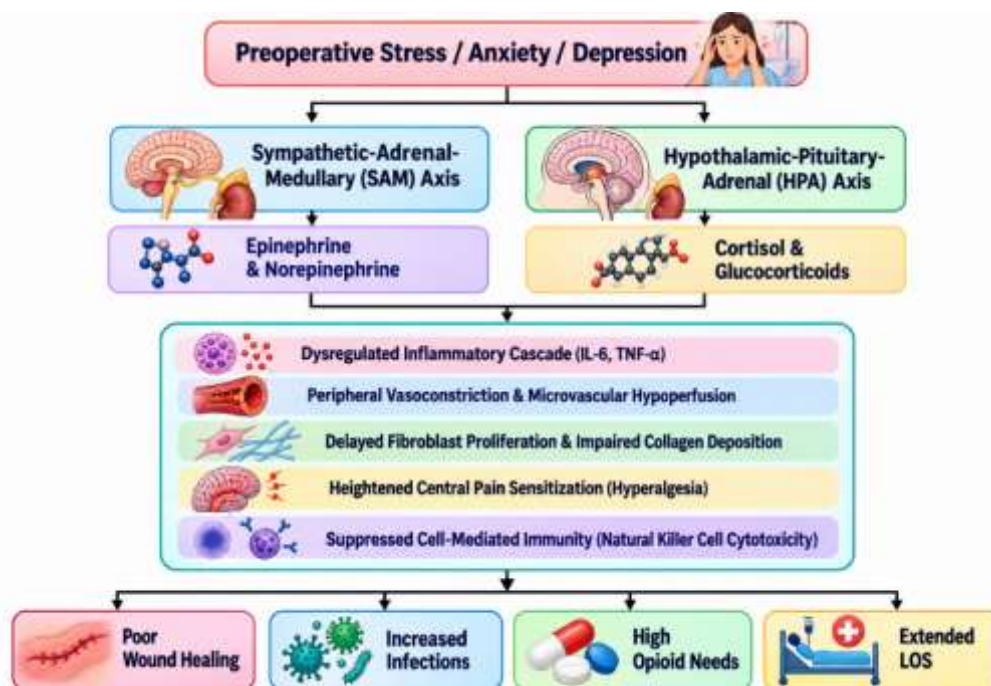
mindfulness-based stress reduction, and acoustic interventions significantly attenuate sympathetic tone, reducing postoperative analgesic consumption and shortening hospitalization. In obstetric and gynecological surgery, trauma-informed nursing communication, heart rate variability biofeedback, and birth-partner integration mitigate fear of emergency cesarean birth and reconstruct maternal self-efficacy while alleviating psychosexual distress after major gynecologic resections. In pediatric surgery, developmentally calibrated interventions—including therapeutic medical play, clown-assisted distraction, immersive virtual reality, and parental anxiety mitigation—consistently lower preoperative apprehension and suppress the incidence of emergence delirium and postoperative maladaptive behavioral regressions.

Conclusion: Integrating mental health nursing interventions into routine perioperative pathways creates a synergistic biopsychosocial continuum of care. Achieving standardized implementation requires overcoming institutional barriers related to nursing workload, establishing formal psychoperioperative training competencies, and implementing multi-tiered clinical screening pathways.

INTRODUCTION AND THEORETICAL FOUNDATIONS

Surgery is universally perceived by patients as a severe existential and physical threat. Annually, over 300 million major surgical procedures are performed worldwide, and epidemiological investigations demonstrate that between 45% and 80% of surgical candidates experience clinically significant perioperative psychological distress (Abate et al., 2020; Chen et al., 2026; Kisieleswska et al., 2025). Rather than functioning as a benign or transient emotional state, psychological distress exerts adverse physiological consequences that directly undermine surgical recovery trajectories (Ghoneim & O'Hara, 2016; Hsu, 2025).

The underlying biological mechanisms linking psychological states to somatic outcomes operate via the complex network of psychoneuroimmunology:



Psychological apprehension activates the sympathetic-adrenal-medullary (SAM) axis and the hypothalamic-pituitary-adrenal (HPA) axis (Chen et al., 2026). Excessive secretion of catecholamines (epinephrine, norepinephrine) triggers tachycardia, systemic hypertension, and peripheral vasoconstriction, leading to compromised microvascular perfusion at the operative site

(Kapritsou & Plastiras, 2022). Simultaneously, sustained hypercortisolemia suppresses cell-mediated immunity, blunts natural killer (NK) cell cytotoxicity, and disrupts the normal sequence of wound repair by impairing fibroblast migration, endothelial proliferation, and collagen deposition (Kiecolt-Glaser et al., 1998; Hsu, 2025).

Furthermore, elevated emotional distress is directly correlated with central sensitization and pain catastrophizing, which amplifies intraoperative anesthetic and sedative requirements and drives acute postoperative hyperalgesia (Zhang et al., 2026; Ferede et al., 2022).

Despite the rapid global adoption of Enhanced Recovery After Surgery (ERAS) protocols over the past two decades, perioperative clinical pathways remain heavily weighted toward somatic and pharmacological optimizations—such as multimodal opioid-sparing analgesia, goal-directed fluid management, carbohydrate loading, and early mobilization (Kehlet, 1997; Ljungqvist et al., 2017; Achrekar, 2022). The mental, affective, and psychological preparation of the surgical patient is frequently relegated to perfunctory informational pamphlets or neglected entirely due to systemic time constraints (Holzer et al., 2024).

Perioperative and psychiatric-mental health nurses occupy a unique vantage point across the surgical journey—spanning preadmission clinics, day-of-surgery holding units, the operating room suite, the post-anesthesia care unit (PACU), and inpatient surgical wards (Zhang et al., 2025; Achrekar, 2022). Grounded in holistic nursing models such as Katharine Kolcaba's Comfort Theory and Jean Watson's Theory of Human Caring, nursing interventions can fundamentally alter a patient's cognitive appraisal of surgery from an uncontrollable catastrophe to an active, collaborative healing experience (Kolcaba, 2003; Liu et al., 2026).

This comprehensive review evaluates the spectrum of mental health nursing interventions tailored across three distinct patient cohorts:

1. Adult general, oncologic, and orthopedic surgical patients;
2. Obstetric and gynecological surgical patients; and
3. Pediatric surgical candidates and their caregivers.

Adult Surgical Populations: Evidence-Based Nursing Interventions

Preoperative Psychological Risk Stratification and Screening Tools

A fundamental component of effective perioperative mental health nursing is timely, systematic risk assessment. Traditional pre-anesthesia visits often focus exclusively on cardiorespiratory risk scores (e.g., ASA physical classification), overlooking affective vulnerability (Dhakal et al., 2026; Kisieleska et al., 2025). High-risk individuals—such as those with baseline mood disorders, substance dependence, high pain catastrophizing, or severe death anxiety—require targeted identification prior to admission (Abate et al., 2020; Abraham et al., 2022).

Validated psychometric instruments suitable for rapid nurse administration in preadmission clinics include:

- **Amsterdam Preoperative Anxiety and Information Scale (APAIS):** A 6-item Likert scale specifically evaluating anxiety related to anesthesia, anxiety related to surgery, and the patient's intrinsic information requirement (Moerman et al., 1996; Dhakal et al., 2026).
- **State-Trait Anxiety Inventory (STAI-State):** The clinical benchmark for quantifying situational anxiety surges immediately preceding induction (Spielberger et al., 1983; Ferede et al., 2022).
- **Hospital Anxiety and Depression Scale (HADS):** A 14-item tool that eliminates confounding somatic complaints (e.g., fatigue, nausea) that could stem from underlying medical illness rather than psychiatric distress (Zigmond & Snaith, 1983; Ishida et al., 2025).
- **Pain Catastrophizing Scale (PCS):** Quantifies rumination, magnification, and helplessness regarding anticipated pain, accurately forecasting high postoperative opioid demand (Sullivan et al., 1995; Yang et al., 2025).

Nurse-Led Cognitive-Behavioral Interventions (CBT) and Cognitive Reframing

Cognitive-behavioral nursing interventions focus on identifying and altering catastrophic cognitions, maladaptive assumptions, and irrational fears surrounding surgical procedures (Yu et al., 2024; Hsu, 2025). In surgical care, brief nurse-delivered CBT protocols encompass cognitive restructuring, behavioral activation, and psychoeducation (Abraham et al., 2022).

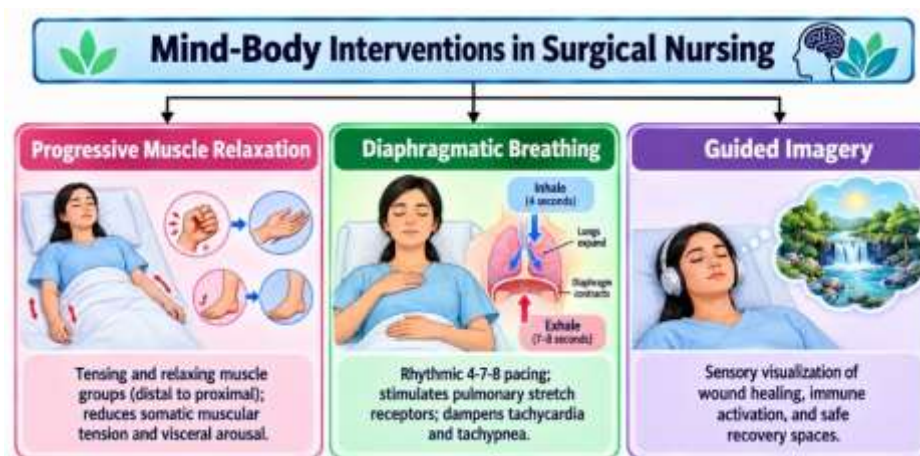
During preadmission clinical encounters, nurses guide patients through cognitive reframing exercises:

1. **Identifying Automatic Cognitive Distortions:** Recognizing pervasive catastrophic thoughts (e.g., *"I will not wake up from general anesthesia"* or *"The pain will be intolerable and tear my stitches open"*).
2. **Reality-Testing and Evidence Generation:** The nurse systematically supplies clinical facts regarding continuous vital monitoring, modern hemodynamic surveillance, depth of anesthesia tracking (bispectral index), and tiered multimodal analgesia regimens (Achrekar, 2022; Kisielewska et al., 2025).
3. **Establishing Coping Self-Statements:** Guiding the patient to replace catastrophic narratives with adaptive cognitions (e.g., *"Pain is a manageable, temporary biological signal that the healthcare team is actively treating; my body has innate physiological healing mechanisms"*).

In prospective trials, patients participating in structured nurse-delivered CBT-based surgical preparation protocols exhibited statistically significant reductions in depression and anxiety scales, heightened recovery self-efficacy, earlier ambulation milestones, and reduced lengths of stay compared to controls receiving routine informational care (Yu et al., 2024; Abraham et al., 2022).

Mind-Body Modalities: Mindfulness-Based Stress Reduction and Relaxation

Mind-body nursing practices engage higher neurocognitive structures to modulate autonomic outputs (Hsu, 2025). When individuals perceive surgical threats, the amygdala stimulates sympathetic outflow while inhibiting the prefrontal cortex; mind-body techniques activate parasympathetic tone via vagal nerve stimulation (Chen et al., 2024; Chen et al., 2026).



- **Progressive Muscle Relaxation (PMR):** Developed originally by Jacobson, PMR systematically trains patients to tense and subsequently release specific muscle groups in a distal-to-proximal sequence. Surgical nurses introduce PMR during preadmission visits, reinforcing practice via audio recordings. Postoperative PMR reduces systemic skeletal tension, diminishes muscle guarding around abdominal or orthopedic incision sites, and significantly lowers self-reported numeric rating scale (NRS) pain scores (Zhang et al., 2025).
- **Controlled Diaphragmatic Breathing:** Slow, deep rhythmic breathing (specifically adopting an exhalation longer than inhalation, such as a 4-second inhalation, 7-second hold, and 8-second exhalation pattern) stimulates pulmonary stretch receptors and baroreceptors, enhancing cardiac vagal tone. This acute intervention directly stabilizes labile blood pressure and reduces tachycardia in holding bays immediately prior to operating room transfer (Kisielewska et al., 2025).
- **Guided Imagery:** Nurses guide patients through multi-sensory mental visualizations—such as picturing healthy cellular oxygenation, serene physical settings, or the successful, comfortable completion of their postoperative rehabilitation.

Controlled studies demonstrate that surgical patients exposed to guided imagery require significantly less patient-controlled analgesia (PCA) morphine and demonstrate lower serum cortisol and interleukin-6 (IL-6) levels during the initial 72 hours post-surgery (Hsu, 2025; Manyande et al., 1995).

Expressive and Sensory Interventions: Music Medicine and Acoustic Conditioning

The operating room environment is inundated with sensory stressors: alarms, metal surgical instruments clattering, monitor beeps, and rapid clinician conversations (Ren & Xue, 2024; Zhang et al., 2026). This acoustic pollution triggers persistent alarm reactions in awake or lightly sedated surgical candidates.

Nurse-implemented "music medicine"—defined as passive listening to curated, patient-selected, or scientifically engineered acoustic tracks with a tempo matching resting heart rates (60–80 beats per minute), low frequency, and absence of jarring percussion—demonstrates exceptional clinical efficacy (Zhang et al., 2026; Yang et al., 2025). The neurobiological mechanism centers on suppressing amygdala hyperactivity and dampening the midbrain reticular activating system (Yang et al., 2025).

A recent meta-analysis of randomized controlled trials demonstrated that perioperative music interventions administered via noise-attenuating headphones:

- Reduced preoperative anxiety scores (standardized mean difference [SMD] -0.95);
- Lowered intraoperative propofol and midazolam titration requirements by 15% to 25%;
- Reduced postoperative pain scores on 10-point visual analogue scales by an average of 1.4 to 1.8 points; and
- Significantly diminished the occurrence of postoperative nausea and vomiting (PONV) secondary to decreased intraoperative opioid and volatile anesthetic administration (Holzer et al., 2024; Zhang et al., 2026; Yang et al., 2025).

Integration Within Enhanced Recovery After Surgery (ERAS) Frameworks

While ERAS guidelines originally concentrated on perioperative metabolic homeostasis, carbohydrate loading, minimally invasive techniques, and early resumption of oral nutrition (Ljungqvist et al., 2017; Kehlet, 1997), recent consensus statements underscore that patient psychological readiness is the primary determinant of protocol adherence (Kapritsou & Plastiras, 2022; Achrekar, 2022).

Nurses drive the operational success of ERAS by bridging physiological instructions with cognitive behavioral support:

- **Demystifying Surgical Milestones:** Patients educated thoroughly regarding *why* early mobilization prevents atelectasis and venous thromboembolism engage more readily in post-surgical ambulation despite surgical discomfort (Achrekar, 2022; Zhang et al., 2025).
- **Addressing Body Image and Functional Loss:** Major oncologic and orthopedic procedures frequently necessitate temporary or permanent alterations in anatomy (e.g., stoma formation, surgical drains, limb prostheses). Preoperative nurse-led counseling addressing body-image disruption and teaching stoma management skills mitigates the acute grief, psychological regression, and learned helplessness frequently encountered on postoperative days 1 through 3 (Achrekar, 2022).
- **Compassion-Focused Nursing Interactions:** A 2024 systematic review and meta-analysis demonstrated that compassionate, personalized communication from perioperative nurses had large effect sizes in decreasing both surgical anxiety ($g = -0.95$) and depressive symptoms ($g = -0.82$), which directly correlated with higher functional recovery scores (Holzer et al., 2024).

Obstetric & Gynecological Surgical Care: Specialized Interventions

Unique Psychodynamics in Obstetric and Gynecological Surgery

Surgical procedures in obstetrics and gynecology carry distinct psychological vulnerabilities. Unlike elective general surgery, obstetric surgeries (predominantly cesarean deliveries) involve the simultaneous psychological management of two lives: the mother and the neonate (Ishida et al., 2025; Ma et al., 2025). In gynecological surgery (e.g., hysterectomy, oophorectomy,

oncogynecological staging, pelvic floor reconstructions, and obstetric fistula repair), operations directly intersect with fertility, sexual identity, femininity, hormonal equilibrium, and profound cultural stigmas (Watt et al., 2017; Yang et al., 2025).



The global prevalence of preoperative anxiety among women scheduled for cesarean section ranges from 63% to 86%, far exceeding rates observed in general surgical cohorts (Ferede et al., 2022; Ishida et al., 2025). Unmanaged anxiety before cesarean birth is associated with hemodynamic instability upon spinal block placement, heightened vasopressor requirements, increased uterine atony, excessive intraoperative blood loss, and significantly lower Obstetric Quality of Recovery (ObsQoR-11) scores on postoperative days 3 and 5 (Ferede et al., 2022; Ishida et al., 2025). Furthermore, acute psychological distress during traumatic birth interventions acts as a major precursor to postpartum depression (PPD) and birth-related post-traumatic stress disorder (PTSD) (Ma et al., 2025).

Trauma-Informed Nursing and Interventions in Emergency vs. Elective Cesarean Birth

Cesarean deliveries diverge fundamentally based on clinical acuity:

- Elective/Scheduled Cesarean Deliveries:** Allows time for proactive nurse-patient engagement. In this setting, nurse-administered **Heart Rate Variability Biofeedback (HRVB)** training has demonstrated remarkable therapeutic utility. In a randomized controlled trial by Chen et al. (2024), women undergoing cesarean birth received 10 sessions of nurse-led HRVB training focused on resonant frequency respiration (approx. 6 breaths per minute). Participants exhibited significant increases in the standard deviation of normal-to-normal RR intervals (SDNN) and low-frequency power (LF), accompanied by significant reductions in perceived stress, situational anxiety, and depressive symptoms on the fifth postpartum day (Chen et al., 2024).
- Emergency Cesarean Sections (EmCS):** Driven by immediate threats to fetal or maternal survival, EmCS occurs under extreme time compression. Qualitative phenomenological investigations reveal that mothers subjected to EmCS experience an acute "stress phase" characterized by overwhelming terror, sensory bombardment (the cold operating theater, bright scalytic lamps, rapid surgical preparation), and a profound sense of helplessness and existential doom (Ma et al., 2025).

In the EmCS pathway, psychiatric and perioperative nurses must execute trauma-informed crisis communication:

- Continuous Narrative Transparency:** The perioperative nurse maintains eye contact and speaks calmly at the patient's head, narrating each procedural phase in simple, transparent language (*"The operating table is tilting to keep blood flowing to your baby; you will feel firm pushing and pressure, which is completely expected"*). This eliminates catastrophic misinterpretation of surgical sensations (Ma et al., 2025).
- Sensory Grounding and Tactile Reassurance:** Holding the mother's hand, placing cool cloths on her forehead, and teaching structured vocal exhalations mitigate hyperventilation and prevent dissociative panic attacks during regional anesthesia (Chen et al., 2024; Ma et al., 2025).

3. **Protecting the Maternal-Infant Dyad:** As soon as clinical stability allows, nurses facilitate immediate or early skin-to-skin contact in the operative theater. Maternal chest contact triggers an immediate surge of oxytocin, which exerts neurobiological anxiolytic effects, dampens maternal amygdalar fear responses, promotes uterine involution, and establishes early neurobehavioral bonding (Ma et al., 2025).

Gynecological Surgery: Addressing Stigma, Sexual Identity, and Hormonal Shifts

Major gynecological interventions, particularly hysterectomies and radical pelvic resections for gynecologic malignancies, trigger complex existential, sexual, and body-image crises.

- **Navigating Surgical Menopause and Grief:** In premenopausal women undergoing bilateral salpingo-oophorectomy, the abrupt cessation of ovarian estrogen production triggers rapid neurochemical shifts, precipitating acute affective lability, sleep disruption, severe anxiety, and hot flushes. Specialized gynecological surgical nurses implement structured pre- and postoperative psychoeducation programs that normalize emotional fluctuations, validate the profound grief over lost fertility, and provide anticipatory guidance regarding hormonal replacement therapies and psychosexual counseling (Achrekar, 2022).
- **Mitigating Stigma in Reconstructive and Fistula Surgery:** In specialized surgical populations—such as women undergoing repair for obstetric fistula—patients frequently carry profound histories of shame, marital rejection, social ostracization, and severe comorbid depression (Watt et al., 2017). In a randomized controlled trial evaluating a 6-session, nurse-delivered cognitive-behavioral and mental health curriculum for obstetric fistula surgical patients, Watt et al. (2017) demonstrated marked, durable improvements in depression scores (CES-D), generalized anxiety (BAI), traumatic stress indices (PCL-C), and self-esteem (Rosenberg Scale), establishing that nurse-led psychological stabilization is a vital prerequisite for holistic surgical recovery and social reintegration.
- **Music and Relaxation Therapies:** As evidenced by Yang et al. (2025), implementing nurse-guided music interventions during the perioperative gynecological trajectory suppresses sympathetic activation, relieves acute surgical wound pain, minimizes postoperative antiemetic usage, and accelerates the time to first ambulation and independent voiding.

Pediatric Surgical Care: Developmental Approaches to Perioperative Mental Health

Developmental Manifestations of Pediatric Surgical Anxiety

Up to 75% of pediatric patients undergo severe anxiety, fear, and behavioral distress during the perioperative process, reaching a sharp peak during separation from caregivers and mask placement during inhalation induction of anesthesia (Mustafa et al., 2024; Song et al., 2026; Otto et al., 2025). Pediatric vulnerability is shaped by developmental age and cognitive maturity:

Pediatric Developmental Vulnerabilities in Surgery		
Age Group	Primary Fear	Clinical Manifestation
Infants & Toddlers (6 mos – 3 yrs)	Stranger anxiety; separation from primary caregiver	Inconsolable crying, motor thrashing, somatic clinging, regression in feeding
Preschool Children (3 – 6 yrs)	Bodily mutilation; dark/monsters; physical pain	Magical thinking, viewing surgery as punishment, vocal resistance, aggression
School-Age Children (7 – 12 yrs)	Loss of control; physical injury; death under sleep	Somatization, silent fear, hyper-vigilance, extensive questioning or complete mute
Adolescents (13 – 18 yrs)	Loss of autonomy, identity, modesty; peer perceptions	Withdrawal, intellectualized non-compliance, social fear, anxiety over waking up

Failure to mitigate pediatric preoperative anxiety produces severe acute and long-term sequelae:

- **Acute Sequelae:** Marked prolongation of anesthesia induction time, autonomic storming (bronchospasm, laryngospasm, cardiac arrhythmias), and a threefold higher incidence of **Emergence Delirium (ED)**—characterized by hyperactive thrashing, disorientation, combativeness, and inconsolability in the PACU (Liang et al., 2021; Otto et al., 2025).
- **Long-Term Neurobehavioral Sequelae:** Development of new-onset maladaptive behavioral regressions occurring up to one year post-discharge, including persistent enuresis, nocturnal terrors, separation anxiety, marked food refusal, temper tantrums, and phobic avoidance of healthcare personnel (Liang et al., 2021; Mustafa et al., 2024).

Therapeutic Play and Child Life Nursing Protocols

Therapeutic medical play represents an essential, evidence-based nursing intervention designed to translate foreign medical equipment and sterile environments into non-threatening, developmentally accessible concepts (He et al., 2014; Liu et al., 2026). Grounded in Kolcaba's Comfort Theory, pediatric nurses provide multisensory comfort interventions across physical, psychospiritual, environmental, and sociocultural domains (Liu et al., 2026).

Effective nurse-led therapeutic play strategies include:

- **Doll-Assisted Medical Demonstration:** Children are given pediatric dolls equipped with anesthesia masks, intravenous catheters, pulse oximeter probes, and surgical dressings. Allowing the child to clean the doll's skin, apply a bandage, and hold the anesthesia mask to the doll's face empowers the child with a sense of mastery and bodily autonomy (He et al., 2014).
- **Familiarization with Anesthetic Delivery:** Pediatric nurses introduce the anesthesia mask as a "magic pilot mask" or "space helmet," offering the child a choice of flavored scents (e.g., strawberry, bubblegum) to coat the inner rim. This transforms a claustrophobic plastic mask into an engaging sensory game (Mustafa et al., 2024).
- **Storybooks and Pre-Surgical Video Tours:** Visually oriented social stories detailing the complete surgical journey—from reception to the play area, the operating suite, and the PACU reunion—significantly decrease baseline anxiety measured on the modified Yale Preoperative Anxiety Scale (m-YPAS) (Liu et al., 2026).

Digital Health, Immersive Virtual Reality (VR), and Distraction

Distraction interventions operate by consuming a child's finite attentional working-memory capacity, leaving fewer cognitive resources available to perceive environmental threats and noxious sensory cues (Mustafa et al., 2024).

Spectrum of Distraction Techniques		
Modality	Mechanism and Clinical Impact	
Immersive Virtual Reality (VR)		Complete visual/auditory blocking of the OR; 360° interactive immersion; superior m-YPAS reduction compared to oral midazolam.
Audiovisual Tablets / Interactive Gaming		Passive or active engagement; effective in holding area and during transport; reduces acute behavioral distress at separation.
Clown Nursing Interventions		Humor-based tension diffusion; social play; significantly lowers both child and parental STAI scores; requires clown acceptance.

- **Virtual Reality (VR) Interventions:** In recent systematic reviews and meta-analyses, immersive VR goggles displayed to children during the holding period and immediately prior to inhalational induction significantly decreased m-YPAS scores

compared to controls, achieving anxiolysis equivalent or superior to midazolam premedication without pharmacological respiratory depression or delayed recovery (Song et al., 2026; Mustafa et al., 2024).

- **Tablet-Based Distraction and Smartphone Gaming:** Allowing children to engage in active video games or stream age-preferred animations during intravenous cannulation significantly lowers pain ratings and reduces combative behaviors (Mustafa et al., 2024).
- **Clown Care / Clown Nursing:** Directed by specialized pediatric therapeutic humor professionals or trained nurses, medical clowning uses humor, magic tricks, and spontaneous playful distraction to de-escalate anxiety in pediatric waiting rooms, providing statistically verified reductions in parental and child anxiety scores (Sridharan & Sivaramakrishnan, 2016).

4.4 Managing the Parent-Child Anxiety Dyad

A child does not experience surgery in psychological isolation; the pediatric patient and the parents form an interdependent emotional unit (He et al., 2014; Liu et al., 2022). High maternal or paternal anxiety reliably predicts heightened child anxiety, poor anesthesia cooperation, and increased post-discharge behavioral morbidity (Santapuram et al., 2021; Ryu et al., 2018).



To disrupt this cycle of emotional contagion, pediatric perioperative nurses employ structured parental coaching:

- **Preoperative Parental Education:** Detailed, transparent walkthroughs explaining surgical steps, safety procedures, and postoperative recovery symptoms systematically alleviate parental uncertainty and fear of the unknown (He et al., 2014).
- **Parental Presence at Induction of Anesthesia (PPIA):** Permitting a calm, prepared parent into the operating suite during inhalational mask induction provides powerful reassurance to children aged 2 to 8 years (Song et al., 2026). However, perioperative nurses must actively assess parental coping capacity: highly anxious, trembling, or visibly distressed parents exacerbate the child's terror during induction. Thus, nurses play a critical gatekeeping and preparatory role—coaching the parent on how to use a calm tone of voice, maintain gentle physical touch, and avoid expressing verbal anxiety in the induction suite (Ryu et al., 2018; Santapuram et al., 2021).

Cross-Population Synthesis & Comparative Analysis

While the underlying neuroendocrine pathways connecting emotional distress to delayed physical healing are conserved across the human lifespan, the clinical expressions of distress, optimal psychometric assessment tools, and corresponding nursing interventions differ across patient populations. The following synthesis contrasts these parameters across adult, obstetric/gynecological, and pediatric surgical domains.

Comparative Framework of Perioperative Mental Health Nursing Interventions

Domain / Parameter	Adult General, Orthopedic & Oncologic Surgery	Obstetric & Gynecological Surgical Care	Pediatric Surgical Care & Caregiver Dyad
Primary Psychological Stressors	Fear of pain, cancer diagnosis, permanent physical disability, loss of autonomy, waking during surgery (Chen et al., 2026; Kisielewska et al., 2025).	Fear of fetal compromise, birth trauma, loss of reproductive capacity, surgical menopause, bodily shame (Ma et al., 2025; Watt et al., 2017).	Separation anxiety, fear of needles/mutilation, sensory overload, unfamiliar medical staff, loss of control (Liang et al., 2021; Mustafa et al., 2024).
Gold-Standard Screening Instruments	• APAIS • STAI-State • HADS • Pain Catastrophizing Scale (Dhakal et al., 2026; Moerman et al., 1996).	• STAI-State • ObsQoR-11 • Edinburgh Postnatal Depression Scale (EPDS) • HADS (Ferede et al., 2022; Ishida et al., 2025).	• m-YPAS (modified Yale Preoperative Anxiety Scale) • FLACC scale (behavioral pain) • PHBQ (post-hospital behavior) (Liu et al., 2026; Song et al., 2026).
Core Nurse-Led Interventions	• Cognitive reframing & CBT • Progressive muscle relaxation • Diaphragmatic breathing • Music medicine • ERAS education (Abraham et al., 2022; Yu et al., 2024; Zhang et al., 2026).	• Heart rate variability biofeedback (HRVB) • Trauma-informed crisis communication • Early skin-to-skin contact • Psychosexual/grief counseling (Chen et al., 2024; Ma et al., 2025).	• Therapeutic medical play & doll demonstrations • Virtual reality distraction • Scented mask familiarization • Parental presence coaching (PPIA) (Mustafa et al., 2024; Song et al., 2026; Liu et al., 2026).
Target Clinical & Physiological Endpoints	• Blunted SAM/HPA axis response	• Hemodynamic stability under spinal block	• Smooth inhalational mask induction



Domain / Parameter	Adult General, Orthopedic & Oncologic Surgery	Obstetric & Gynecological Surgical Care	Pediatric Surgical Care & Caregiver Dyad
	• Reduced opioid consumption • Lower NRS pain scores • Faster ambulation & reduced length of stay (Hsu, 2025; Holzer et al., 2024; Zhang et al., 2025).	• Higher ObsQoR-11 scores • Enhanced maternal-infant bonding • Prevention of PPD and birth-related PTSD (Chen et al., 2024; Ishida et al., 2025; Ma et al., 2025).	• Suppressed emergence delirium in PACU • Reduced post-discharge behavioral regressions (enuresis, nightmares) (Liang et al., 2021; Otto et al., 2025).

Implementation Challenges, Systemic Barriers, and Clinical Protocols

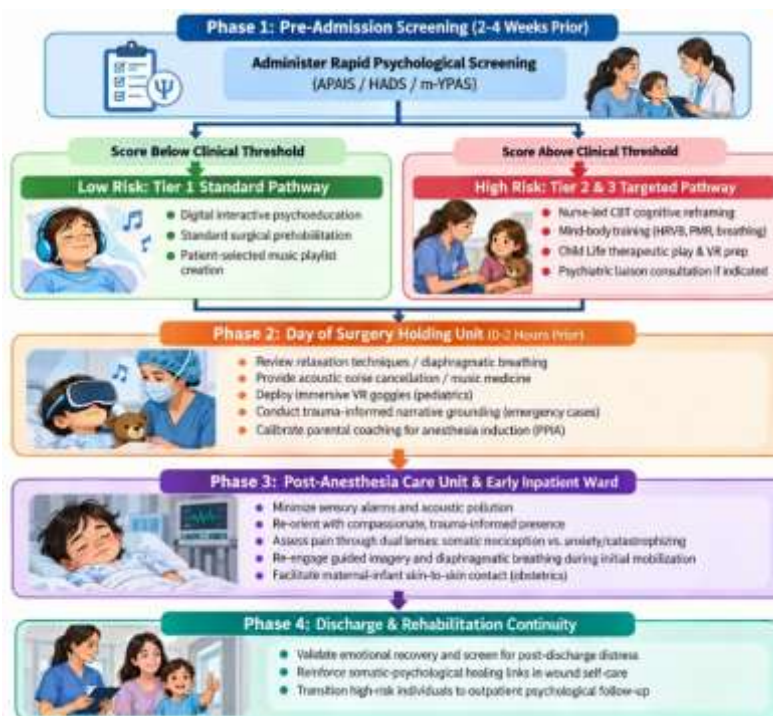
Institutional Constraints and Nursing Workload

Despite compelling randomized trial evidence, the widespread integration of mental health nursing interventions into standard surgical workflows encounters systemic obstacles:

- **Time Constraints and Acute Staffing Shortages:** Surgical nurses face demanding administrative, medication administration, and wound management workloads. Conducting comprehensive 30-minute cognitive-behavioral or guided imagery sessions in fast-paced surgical units is often challenging without protected clinical time (Achrekar, 2022; Abraham et al., 2022).
- **The "Somatic Bias" of Perioperative Medicine:** Acute surgical environments prioritize tangible biomechanical parameters (blood pressure, fluid balance, surgical margins, drain outputs). Psychological distress is frequently minimized as an inevitable emotional byproduct of surgery rather than a modifiable clinical determinant of healing (Hsu, 2025; Holzer et al., 2024).
- **Lack of Formal Psychoperioperative Training:** Basic nursing education frequently segregates mental health curricula into psychiatric ward rotations, leaving perioperative and surgical ward nurses with limited specialized training in acute de-escalation, rapid cognitive reframing, and biofeedback facilitation (Achrekar, 2022; Kapritsou & Plastiras, 2022).

Standardized Nurse-Led Perioperative Psychological Protocol

To operationalize mental health interventions without overloading acute nursing staff, healthcare institutions should adopt a structured, risk-stratified, multi-phase clinical pathway:



FUTURE DIRECTIONS AND POLICY IMPLICATIONS

The modern perioperative landscape is on the cusp of an integrative transformation, driven by emerging technologies and an evolving understanding of psychoneuroimmunology:

- **Biomarker-Driven Adaptive Interventions:** Rather than relying exclusively on subjective self-report questionnaires, future nursing assessment will incorporate continuous, non-invasive digital physiological biomarkers. Wearable biosensors capable of monitoring real-time Heart Rate Variability (HRV), galvanic skin response (electrodermal activity), and sleep-architecture fragmentation can alert nurses to subclinical surges in autonomic arousal, triggering automated or nurse-guided calming interventions (Chen et al., 2024; Chen et al., 2026).
- **Artificial Intelligence and Immersive Digital Therapeutics:** Generative AI-powered conversational agents and personalized virtual reality modules represent scalable solutions to acute nursing shortages. Automated, evidence-based cognitive-behavioral preparation programs delivered via mobile applications can guide patients through personalized cognitive reframing, pre-surgical visualization, and breathing pacing prior to admission, preserving direct nursing hours for high-risk, complex surgical patients (Kisieleska et al., 2025; Song et al., 2026).
- **Policy Mandates and Hospital Accreditation:** National healthcare quality organizations and accreditation bodies (e.g., The Joint Commission, Magnet Recognition Program) must evolve beyond purely surgical site infection (SSI) and readmission metrics. Perioperative mental health screening and psychological preparation should be incorporated as core hospital quality and safety benchmarks, incentivizing institutions to fund dedicated perioperative psychiatric liaison nursing positions (Achrekar, 2022; Hsu, 2025).

CONCLUSION

Perioperative psychological distress is not an inconsequential subjective feeling; it is a profound clinical stressor that drives autonomic dysregulation, impairs cellular immune function, suppresses wound repair, and elevates postoperative pain, complications, and hospital readmissions. As demonstrated across adult, obstetric and gynecological, and pediatric surgical populations, specialized nurse-led mental health interventions—ranging from cognitive reframing and mindfulness to music medicine, heart rate variability biofeedback, and developmentally calibrated therapeutic play—exert clear, clinically documented improvements on surgical recovery.

Transitioning perioperative medicine from a predominantly biomechanical model to a comprehensive biopsychosocial paradigm demands the systematic integration of mental health screening, formal psychoperioperative nursing education, and standardized, multi-tiered intervention pathways. When mental health care is woven seamlessly into the surgical continuum, patients achieve not merely somatic healing, but resilient emotional and physiological recovery.

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