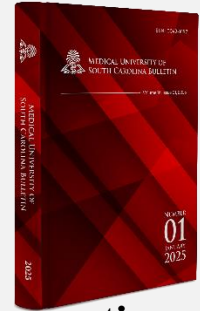




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The Correlation Between Preoperative Anxiety and Postoperative Pain Perception in General Surgery Patients

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Article History :

Received date : 2013/10/17
Revised date : 2013/11/21
Accepted date : 2013/12/14
Published date : 2014/01/09



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ABSTRACT

Introduction: Postoperative pain is a significant concern for surgical patients, impacting recovery, mobility, and overall satisfaction. While surgical technique and analgesic regimens are primary determinants, psychological factors, particularly **preoperative anxiety**, play a crucial, yet often underestimated, role in shaping the **postoperative pain experience**. Understanding this link is vital for holistic patient care in general surgery.

Literature Review: This literature review examines the strong association between preoperative anxiety and heightened postoperative pain perception in general surgery patients. It explores the intricate psychophysiological mechanisms, including central sensitization, increased sympathetic nervous system activity, and altered pain modulation pathways, which explain why anxious patients often report more severe pain. Studies consistently demonstrate that patients with higher levels of preoperative anxiety experience greater pain intensity, require more analgesia, and report lower satisfaction with pain control across various general surgical procedures. The review also discusses methods for assessing preoperative anxiety and the potential benefits of psychological interventions in mitigating this risk.

Conclusion: Preoperative anxiety is a significant and independent predictor of increased postoperative pain perception in general surgery patients. Given its pervasive influence on the pain experience, comprehensive preoperative anxiety screening and targeted psychological interventions are essential to improve pain management and overall surgical outcomes. Further research is needed to refine and standardize these interventions for broader clinical application.

Keywords: Preoperative anxiety, Postoperative pain, General surgery, Pain perception, Psychological factors

Introduction

Postoperative pain remains a universal challenge in surgical practice, often leading to delayed recovery, increased complications, and diminished patient satisfaction. While advancements in surgical techniques and pharmacological analgesia have significantly improved pain control, a substantial number of patients continue to report moderate to severe pain after surgery. Beyond physiological factors related to the surgical procedure itself, psychological elements, particularly **preoperative anxiety**, are increasingly recognized as powerful modulators of the **postoperative pain experience**. Anxiety before surgery is a common emotional response, driven by fear of the unknown, potential complications, pain, or loss of control. This emotional state can profoundly influence an individual's pain threshold, pain tolerance, and subjective perception of pain after the surgical intervention. Understanding this intricate psychophysiological link is crucial for surgeons, anesthesiologists, and nursing staff to adopt a more holistic approach to pain management, thereby optimizing recovery and improving the overall quality of care in general surgery. This literature review aims to systematically explore the correlation between preoperative anxiety and postoperative pain perception in general surgery patients, highlighting the underlying mechanisms and the clinical implications for patient management.

Literature Review

The relationship between **preoperative anxiety** and **postoperative pain perception** in general surgery patients is complex, yet consistently demonstrated in the literature. High levels of

anxiety before surgery can profoundly alter an individual's pain processing pathways, leading to a heightened and more distressing pain experience after the procedure.

One of the primary mechanisms linking anxiety to increased pain is **central sensitization** (Keefe et al., 2004; Melzack, 1999). Preoperative anxiety can prime the central nervous system, making it more responsive to painful stimuli. This involves changes in neuronal excitability in the spinal cord and brain, leading to an amplification of pain signals. Consequently, even a standard noxious input from the surgical wound can be perceived as more intense and distressing by an anxious patient.

Furthermore, anxiety activates the **sympathetic nervous system**, leading to a "fight or flight" response (Spielberger, 1975; Johnstone et al., 1980). This activation can cause muscle tension, increased heart rate, and altered blood flow, all of which can contribute to the perception of pain and discomfort. Chronic sympathetic activation can also deplete endogenous opioid stores, further reducing the body's natural analgesic capabilities (Flor et al., 1992).

Anxiety can also influence **pain modulation pathways**. The descending pain inhibitory pathways, which normally act to suppress pain signals, may be less effective in anxious individuals. Conversely, facilitatory pathways might be enhanced, further contributing to a magnified pain experience (Bushnell et al., 1985; Fields and Basbaum, 1999). The patient's **cognitive appraisal** of pain is also critical; anxious patients may catastrophize their pain, focusing excessively on its negative aspects, which amplifies their subjective distress and perceived intensity (Sullivan et al., 1995).

Numerous studies across various general surgical procedures have provided robust evidence for this association. Patients reporting higher levels of preoperative anxiety, as measured by validated tools such as the State-Trait Anxiety Inventory (STAI) or visual analogue scales for anxiety, consistently report:

- **Higher postoperative pain intensity scores**, particularly in the early postoperative period (Kain et al., 2000; Somers and Bell, 2004).
- **Increased analgesic requirements**, including higher doses of opioids (Mitchell, 2007; Aypar et al., 2006).
- **Lower satisfaction with pain control** (Chung et al., 2008; McKinley et al., 1996).

- **Delayed functional recovery** and longer hospital stays, indirectly influenced by persistent and poorly controlled pain (Scott and Vandal, 1998).

This correlation has been observed in diverse general surgical contexts, including abdominal surgeries (e.g., cholecystectomy, appendectomy), breast surgeries, and vascular procedures (Domar et al., 1993; Kindler et al., 2000). The evidence suggests that preoperative anxiety is an independent predictor of postoperative pain, even after controlling for other factors such as age, sex, surgical type, and actual tissue damage.

Given the significant impact, the importance of **preoperative anxiety screening** and **targeted psychological interventions** has gained recognition. Simple screening tools can identify anxious patients who may benefit from interventions such as patient education, relaxation techniques, cognitive behavioral therapy (CBT) principles, or anxiolytic medications (Sheehan et al., 2007; Boeke and Bonnel, 2008). These interventions aim to reduce anxiety levels, thereby potentially modulating the postoperative pain experience and improving overall patient outcomes.

Conclusion

Preoperative anxiety is a powerful and independent determinant of the **postoperative pain perception** in general surgery patients. The psychophysiological mechanisms underlying this correlation, including central sensitization, sympathetic activation, and altered pain modulation, underscore the profound influence of a patient's emotional state on their physical experience of pain. Consistent evidence demonstrates that higher levels of preoperative anxiety are associated with increased pain intensity, greater analgesic requirements, and reduced satisfaction with pain control. Recognizing this critical link, comprehensive preoperative anxiety screening should be integrated into routine surgical assessment. Furthermore, the implementation of targeted psychological interventions, such as patient education, relaxation techniques, or cognitive behavioral strategies, is essential to mitigate preoperative anxiety, thereby improving postoperative pain management and ultimately enhancing overall recovery and patient satisfaction in general surgery. Continued research is needed to further delineate effective intervention strategies and integrate them seamlessly into perioperative care pathways.

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