

Impact of Systematic Nursing on the Stress Response and Recovery of Gastrointestinal Function in Patients Undergoing Cholecystectomy

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Abstract

Cholecystectomy, the surgical removal of the gallbladder, is a common procedure often necessitated by gallbladder diseases such as gallstones. While generally safe, the surgery can induce significant stress responses in patients, adversely affecting their recovery, particularly gastrointestinal function. This review explores the impact of systematic nursing on managing stress responses and facilitating recovery in patients undergoing cholecystectomy. Systematic nursing encompasses a structured approach that includes comprehensive preoperative education, effective pain management, and supportive postoperative care. The stress response in surgical patients involves complex physiological and psychological mechanisms, including the activation of the hypothalamic-pituitary-adrenal (HPA) axis, leading to the release of stress hormones such as cortisol and adrenaline. These hormonal changes can disrupt gastrointestinal motility, resulting in complications like delayed gastric emptying and postoperative ileus. Psychological factors, including preoperative anxiety and feelings of helplessness, further complicate recovery. Systematic nursing interventions play a crucial role in mitigating these stress responses. Preoperative education helps patients feel informed and in control, reducing anxiety levels. Psychological support techniques, such as relaxation exercises and guided imagery, can further alleviate stress. During the perioperative period, continuous monitoring and effective pain management are essential for promoting recovery. Postoperatively, early mobilization and tailored dietary modifications are vital for restoring gastrointestinal function. Evidence suggests that patients receiving systematic nursing care experience lower levels of anxiety and depression, faster recovery of gastrointestinal function, and improved overall satisfaction with their surgical experience. This review underscores the importance of integrating systematic nursing practices into perioperative care to enhance patient outcomes. Future research should focus on developing standardized protocols and exploring the long-term effects of systematic nursing interventions across various surgical procedures. By addressing both physiological and psychological needs, systematic nursing

can significantly improve recovery trajectories for patients undergoing cholecystectomy.

Introduction

Cholecystectomy, the surgical removal of the gallbladder, is one of the most frequently performed surgical procedures worldwide. It is primarily indicated for the treatment of gallstones and other gallbladder-related disorders. The prevalence of gallbladder disease has led to an increase in the number of cholecystectomies performed annually, making it a significant area of focus in surgical practice. While the procedure is generally considered safe, it is not without its challenges, particularly concerning the stress response and recovery of gastrointestinal function in patients. The perioperative period is often fraught with anxiety and uncertainty, which can significantly impact patient outcomes.

The stress response in surgical patients encompasses a complex interplay of physiological and psychological factors. The anticipation of surgery can lead to heightened anxiety, which may trigger a cascade of hormonal and metabolic changes that adversely affect recovery. In particular, the gastrointestinal system is sensitive to stress, and disruptions in its normal function can lead to complications such as postoperative nausea, vomiting, and delayed gastric emptying. Systematic nursing interventions, which include comprehensive preoperative education, effective pain management, and postoperative support, can play a crucial role in addressing these issues.

This article aims to explore the impact of systematic nursing on the stress response and recovery of gastrointestinal function in patients undergoing cholecystectomy. It will delve into the physiological and psychological aspects of the stress response, the role of systematic nursing in mitigating these effects, and the evidence supporting the efficacy of such interventions. By understanding the multifaceted nature of stress and recovery in surgical patients, healthcare providers can better implement systematic nursing practices that enhance patient outcomes.

Understanding the Stress Response in Surgical Patients

The stress response is a natural physiological reaction to perceived threats or challenges, often referred to as the "fight or flight" response. In the context of surgery, patients may experience significant anxiety due to various factors, including fear of the unknown, concerns about pain, and apprehension regarding postoperative outcomes. This anxiety can trigger a series of physiological changes that may complicate recovery.

Physiological Mechanisms of Stress

When a patient perceives a surgical procedure as a threat, the body responds by activating the hypothalamic-pituitary-adrenal (HPA) axis. This activation leads to the release of stress hormones, including cortisol and adrenaline. These hormones prepare the body to respond to stress by increasing heart rate, blood pressure, and blood glucose levels. While these changes can be beneficial in acute situations, they can also have detrimental effects on recovery, particularly in the context of surgery.

One of the most significant impacts of stress is on the gastrointestinal system. The release of stress hormones can lead to alterations in gastrointestinal motility, resulting in delayed gastric emptying and increased risk of postoperative complications such as ileus. Additionally, stress can exacerbate pre-existing gastrointestinal conditions, further complicating recovery. The interplay between stress and gastrointestinal function is particularly concerning, as it can lead to a cycle of discomfort and anxiety that hinders the healing process.

Psychological Aspects of Stress

The psychological impact of surgery cannot be underestimated. Preoperative anxiety is prevalent among patients undergoing cholecystectomy, and studies have shown that elevated anxiety levels can persist into the postoperative period. This ongoing anxiety can lead to a negative feedback loop, where stress exacerbates gastrointestinal dysfunction, which in turn increases anxiety and prolongs recovery.

Patients may also experience feelings of helplessness and loss of control, which can further contribute to their stress levels. The uncertainty surrounding surgical outcomes, potential complications, and the recovery process can create a sense of vulnerability that heightens anxiety. Addressing these psychological aspects is crucial for promoting recovery and improving overall patient outcomes.

The role of psychological support in the perioperative setting cannot be overstated. Interventions aimed at reducing anxiety, such as cognitive-behavioral therapy, relaxation techniques, and preoperative counseling, have been shown to be effective in alleviating stress and improving patient satisfaction. By fostering a supportive environment, healthcare providers can help patients navigate the emotional challenges

associated with surgery.

The Role of Systematic Nursing in Mitigating Stress

Systematic nursing encompasses a structured and comprehensive approach to patient care that includes assessment, planning, implementation, and evaluation. This approach is particularly beneficial in the perioperative setting, where a holistic understanding of patient needs can significantly mitigate stress responses and enhance recovery.

Preoperative Interventions

Effective preoperative care is essential for reducing anxiety and preparing patients for surgery. One of the primary components of preoperative care is patient education. Providing patients with clear and comprehensive information about the surgical procedure, expected outcomes, and postoperative care can significantly reduce anxiety levels. When patients feel informed and prepared, they are more likely to experience a sense of control, which can alleviate stress.

In addition to education, psychological support is a critical aspect of preoperative care. Nurses can employ various techniques to help patients manage anxiety, including relaxation exercises, guided imagery, and mindfulness practices. These interventions can help patients develop coping strategies and reduce their overall stress levels. Furthermore, establishing a rapport between nurses and patients can enhance trust and communication, allowing patients to express their concerns and fears more openly. This supportive relationship can be instrumental in alleviating anxiety and fostering a sense of security as patients approach their surgical experience.

Perioperative Management

During the perioperative period, systematic nursing care focuses on continuous monitoring and assessment of the patient's physiological and psychological status. Early identification of stress responses allows for timely interventions, which can prevent complications and promote recovery. Nurses play a pivotal role in observing changes in vital signs, pain levels, and emotional well-being, ensuring that any signs of distress are addressed promptly.

Effective pain management is another crucial aspect of perioperative care. Pain is a significant source of stress for surgical patients, and inadequate pain control can lead to increased anxiety and delayed recovery. Systematic nursing involves the use of multimodal pain management strategies, including pharmacological and non-pharmacological approaches. By addressing pain effectively, nurses can help reduce stress and improve patient comfort. Techniques such as patient-controlled analgesia (PCA), regional anesthesia, and non-pharmacological methods like music therapy and guided relaxation can be integrated into the pain management plan to enhance patient satisfaction and recovery.

Postoperative Care and Recovery

Postoperative care is a critical phase in the recovery process, and systematic nursing plays a vital role in facilitating gastrointestinal function recovery. Early mobilization is essential for promoting bowel function and preventing complications such as ileus. Nurses can encourage patients to engage in light physical activity as soon as it is safe, which can stimulate gastrointestinal motility and enhance recovery. The importance of early ambulation cannot be overstated, as it not only aids in gastrointestinal recovery but also contributes to overall physical well-being and reduces the risk of postoperative complications such as deep vein thrombosis.

Dietary modifications are also an important aspect of postoperative care. Nurses can work with dietitians to develop individualized nutrition plans that gradually reintroduce food while considering the patient's tolerance and preferences. This tailored approach can help minimize gastrointestinal discomfort and promote a smoother recovery. Educating patients about the importance of nutrition in their recovery process can empower them to make informed choices that support their healing.

Emotional support during the postoperative period is equally crucial. Nurses can provide reassurance and address any concerns patients may have about their recovery. Engaging in open communication and fostering a supportive environment can significantly reduce anxiety and enhance the overall recovery experience. The role of nurses in providing emotional support extends beyond mere reassurance; it involves active listening, validating patients' feelings, and offering practical solutions to their concerns.

Evidence Supporting Systematic Nursing Interventions

Numerous studies have demonstrated the positive impact of systematic nursing on the stress response and recovery of gastrointestinal function in patients undergoing cholecystectomy. Research indicates that patients who receive systematic nursing care experience lower levels of anxiety and depression compared to those who receive standard care. This is often measured using validated scales that assess psychological

well-being. Furthermore, systematic nursing has been associated with faster recovery of gastrointestinal function. Patients receiving comprehensive nursing interventions tend to exhibit earlier return of bowel sounds, quicker mobilization, and shorter hospital stays. These outcomes can be attributed to the holistic approach that addresses both the physical and psychological needs of patients. The integration of systematic nursing practices not only enhances recovery but also contributes to improved patient satisfaction and overall quality of care.

Quality of Life Improvements

The benefits of systematic nursing extend beyond immediate recovery. Patients who receive systematic nursing care report enhanced quality of life post-discharge. This improvement is often reflected in higher satisfaction scores and better overall well-being. By addressing the multifaceted needs of patients, systematic nursing contributes to a more positive surgical experience and long-term recovery. The emphasis on patient-centered care, which prioritizes the individual needs and preferences of patients, is a hallmark of systematic nursing that leads to improved outcomes.

Challenges in Implementing Systematic Nursing

Despite the clear benefits of systematic nursing, several challenges must be addressed to optimize its implementation in clinical practice. One significant challenge is resource allocation. Adequate staffing and training are essential for the successful execution of systematic nursing interventions. Healthcare facilities must invest in ongoing education and training programs to equip nurses with the necessary skills to provide comprehensive care.

Another challenge is the need for personalized care. Each patient's response to stress and recovery can vary significantly based on individual factors such as age, comorbidities, and personal preferences. Systematic nursing must be adaptable to meet these diverse needs, ensuring that care is tailored to each patient's unique circumstances. The development of standardized protocols that allow for flexibility in implementation can help address this challenge, ensuring that all patients receive high-quality care while accommodating their individual needs.

Future Directions

Further research is needed to explore the long-term effects of systematic nursing on postoperative recovery and to identify best practices for implementation in diverse healthcare settings. Additionally, studies should focus on the development of standardized protocols that can be adapted to various surgical procedures beyond cholecystectomy. By continuing to investigate and refine systematic nursing practices, healthcare providers can ensure that patients receive the highest quality of care throughout their surgical journey. Moreover, the integration of technology in nursing practices, such as telehealth and digital health records, can enhance the systematic nursing approach. These tools can facilitate better communication between healthcare providers and patients, allowing for more personalized care and timely interventions. The use of mobile applications for patient education and symptom tracking can empower patients to take an active role in their recovery, further enhancing the effectiveness of systematic nursing interventions.

In summary, systematic nursing represents a critical component in the management of stress responses and the recovery of gastrointestinal function in patients undergoing cholecystectomy. Through comprehensive preoperative education, effective pain management, and supportive postoperative care, nurses can significantly enhance patient outcomes and contribute to a more positive surgical experience. The ongoing commitment to research, education, and the integration of innovative practices will be vital in advancing the field of nursing and improving the care provided to surgical patients.

Conclusion

The impact of systematic nursing on the stress response and recovery of gastrointestinal function in patients undergoing cholecystectomy is profound. By addressing both the physiological and psychological aspects of care, systematic nursing promotes faster recovery, reduces anxiety and depression, and enhances overall quality of life. As healthcare continues to evolve, integrating systematic nursing practices into perioperative care will be essential for improving patient outcomes and satisfaction. The emphasis on a holistic approach that considers the multifaceted nature of patient experiences is crucial in fostering an environment conducive to healing.

References:

1. Wang "Effect of accelerated rehabilitation nursing programmes on surgical site wound infection in patients undergoing laparoscopic cholecystectomy: A meta-analysis" *International wound journal* (2023) doi:10.1111/iwj.14346
2. "Evaluation of Nursing Effect of Intradermal Acupuncture for Postoperative Flatulence" *Frontiers in medical science research* (2023) doi:10.25236/fmsr.2023.050304
3. Schulz et al. "Telephonic nursing intervention for laparoscopic cholecystectomy and hernia repair: A randomized controlled study" *Bmc nursing* (2020) doi:10.1186/s12912-020-00432-y
4. "Clinical Nursing Care of Patients with Intestinal Obstruction after Laparoscopic Surgery for Hysteromyoma" *Meds clinical medicine* (2023) doi:10.23977/medsc.2023.040604
5. Ding et al. "The application of enhanced recovery after surgery (ERAS)/fast-track surgery in gastrectomy for gastric cancer: a systematic review and meta-analysis" *Oncotarget* (2017) doi:10.18632/oncotarget.18581
6. Wang et al. "Application of Operating Room Nursing Intervention to Incision Infection of Patients Undergoing Gastrointestinal Surgery Can Reduce Complications and Improve Gastrointestinal Function" *Frontiers in surgery* (2022) doi:10.3389/fsurg.2022.842309
7. Hao "Effects of comprehensive nursing intervention on quality of life, Self-efficacy, gastrointestinal reaction and immune function of patients with breast cancer undergoing chemotherapy" *Pakistan journal of medical sciences* (2024) doi:10.12669/pjms.40.6.7857
8. Han et al. "Surgical Stress Response and Clinical Outcomes of Single Port Laparoscopic Cholecystectomy: Prospective Nonrandomized Study" *The american surgeon* (2012) doi:10.1177/000313481207800443
9. Zhou et al. "Effect of Predictive Nursing Intervention on the Gastrointestinal Side Effects of I-131 Re-treatment in Patients with Differentiated Thyroid Cancer (DTC)" *International journal of clinical oncology and cancer research* (2022) doi:10.11648/j.ijcocr.20220702.15
10. Ai "A randomised controlled trial: effect of the meticulous nursing model on the treatment compliance and quality of life of patients with upper gastrointestinal bleeding" *Annals of palliative medicine* (2021) doi:10.21037/apm-21-1283
11. Calvo-Soto et al. "Spinal—General Anaesthesia Decreases Neuroendocrine Stress Response in Laparoscopic Cholecystectomy" *Journal of international medical research* (2012) doi:10.1177/147323001204000228
12. Eyzaguirre et al. "The most frequent symptoms of postcholecystectomy syndrome for cholelithiasis patients older than 40 years of age" *International journal of gastrointestinal intervention* (2023) doi:10.18528/ijgii220064
13. Su et al. "Application of Refined Nursing Combined with Comprehensive Treatment of Traditional Chinese and Western Medicine in Gastrointestinal Dysfunction after Tumor Operation" *Evidence-based complementary and alternative medicine* (2022) doi:10.1155/2022/4957061
14. Wanjura et al. "Gastrointestinal Quality-of-Life After Cholecystectomy: Indication Predicts Gastrointestinal Symptoms and Abdominal Pain" *World journal of surgery* (2014) doi:10.1007/s00268-014-2736-3
15. Latenstein et al. "Prevalence of dyspepsia in patients with cholecystolithiasis: a systematic review and meta-analysis" *European journal of gastroenterology & hepatology* (2019) doi:10.1097/meg.0000000000001463
16. Borges et al. "COMPARATIVE ANALYSIS OF IMMUNOLOGICAL PROFILES IN WOMEN UNDERGOING CONVENTIONAL AND SINGLE-PORT
17. LAPAROSCOPIC CHOLECYSTECTOMY" *Abcd arquivos brasileiros de cirurgia digestiva (são paulo)* (2016) doi:10.1590/0102-6720201600030009
18. Ai and Peng "Effect and Nursing Satisfaction of Bedside Nursing Combined with Detail Nursing in Clinical Nursing of Gastroenterology Department" *Journal of oncology* (2021) doi:10.1155/2021/6839555
19. Melloy et al. "Proactive Nursing Care is the Key to Successful Day Case Laparoscopic Cholecystectomy at a Rural Hospital" *Journal of advances in medical and pharmaceutical sciences* (2016) doi:10.9734/jamps/2016/29117
20. Shang et al. "Update on the natural orifice transluminal endoscopic surgery for gallbladder preserving gallstones therapy: A review" *Medicine* (2022) doi:10.1097/md.00000000000031810
21. Ciaula et al. "Gastrointestinal defects in gallstone and cholecystectomized patients" *European journal of clinical investigation* (2019) doi:10.1111/eci.13066

22. Matovic and Delibegovic "Adrenocorticotrophic Hormone (ACTH) and Cortisol Monitoring as Stress Markers During Laparoscopic Cholecystectomy: Standard and Low Intraabdominal Pressure and Open Cholecystectomy" Medical archives (2019) doi:10.5455/medarh.2019.73.257-261
23. Bielefeldt "Regional Differences in Hospitalizations and Cholecystectomies for Biliary Dyskinesia" Journal of neurogastroenterology and motility (2013) doi:10.5056/jnm.2013.19.3.381
24. Wei et al. "Application effect of gastrointestinal bundle nursing on the protection of gastrointestinal function in patients with gastric cancer" Medicine (2023) doi:10.1097/md.00000000000034308
25. Yu "Effects of ESPCS mode nursing on the surgical tolerance, gastrointestinal tract recovery and self-management efficacy of patients with colon cancer" Oncology letters (2024) doi:10.3892/ol.2024.14380
26. Lin "Effects of operating room nursing intervention on wound infection in patients undergoing ovarian cysts surgery: A meta-analysis" International wound journal (2024) doi:10.1111/iwj.14614