Exploring the Adverse Effects of Anesthesia and how Nurses can Alleviate It

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Abstract

Anesthesia is widely used in various medical procedures, including surgeries, screenings, tests, and dental treatments. However, its extensive use also carries the risk of unintended complications and adverse effects. It is crucial for nurses to be equipped with the knowledge and skills to manage patients experiencing these adverse events and to know the most effective interventions preoperatively, intraoperatively, and postoperatively. This systematic literature review includes studies on anesthesia-related complications and the nursing interventions designed to address them. The analysis of 20 selected studies including case studies, clinical trials, and literature reviews, demonstrates a clear connection between specific nursing interventions and antidotes for managing anesthesia complications. This integrative review was conducted following the PRISMA 2020 guidelines. The inclusion criteria included being publish in English, internationally, and within hospital settings trials. The exclusion criteria were published older than ten years, non-English publications, theses and dissertations and nonacademic settings. The findings suggest that IV lipid infusion, oxygen administration, fluid management, position changes, and early symptoms recognition significantly reduce anesthesia-related adverse effects. This research will contribute to the advancement of nursing practice by enhancing postoperative care for patients who have undergone anesthesia. By equipping nurses with targeted strategies to manage anesthesia related complications, the recovery process can be accelerated, leading to shorter hospital stays and reducing the likelihood of long-term issues.

Introduction

Anesthesia is commonly administered in various medical procedures, such as surgeries, screening, tests, and dental treatments. However, along with its widespread use, comes the potential for unintended consequences and adverse effects. Therefore, given that nurses often provide care for patients both before and after procedures, it is essential for them to be well-prepared to assist individuals who may be experiencing adverse effects from anesthesia, regardless of their specific nursing specialization. Nurses' responsibilities extend beyond the administration of care during the procedure itself. They are integral to the entire perioperative process, providing preoperative assessments and postoperative care. By conducting thorough assessments, nurses play a key role in identifying potential risk factors that could influence anesthesia administration and effects. This includes evaluating the patient's medical history, current medications, allergies, and overall physical condition. However, nurses' preparedness to manage the adverse effects is as crucial as the prevention measurements.

Background

Anesthesia is in every aspect of healthcare; however, it has the potential to cause adverse complications to the patient. Beamon et al. (2020) identified potential risks associated with neuraxial anesthesia, administered into the cerebrospinal fluid via the back. Particularly hazardous when administered to laboring patients, it may lead to adverse neonatal outcomes in pre-eclampsia patients and is linked to increased neonatal morbidity. It can also adversely affect laboring patients, causing a post-dural puncture headache (PDPH) (Alatni et al., 2024). There have been numerous cases of patients undergoing anesthesia and developing postoperative cognitive dysfunction (POCD), which is defined as a decline in cognitive function after full recovery of consciousness and persisting even when anesthesia has worn off (Berger et al., 2018). Delayed neurological recovery (dNCR) is another neurological complication following anesthesia, characterized by memory loss, mood and behavior disorders, cognitive deficits, and psychosis, particularly in patients undergoing cardiac surgery. There is evidence to support that general anesthesia decreases psychomotor skills in patients postoperatively in comparison to other anesthesia methods and combined general anesthesia with epidural anesthesia (Kasputyte et al., 2021).

Elevated levels of C-reactive proteins (CRP), triggered by inflammation, intraoperative tissue damage, or blood loss, are frequently observed in surgical patients under anesthesia. Higher CRP levels have been correlated with increased postoperative complications and time under anesthesia (Nakamoto et al., 2019). Because of this, anesthesia has the protentional to cause a wide range of adverse effects. One of the adverse effects that develops postoperatively is postoperative delirium. According to Ha et al. (2018) patients that develop postoperative delirium have an increased probability of developing other complications 90 days (about 3 months) later and hospital mortality. Delirium can increase the probability of acquiring long term cognitive impairments and post-traumatic stress disorder (PTSD) (Daun, et al., 2022). A serious complication of anesthesia is a rare but potentially fatal condition called Local anesthetic systemic toxicity (LAST). It can present itself in many ways, but some signs and symptoms include seizures, altered mental state, hypotension, dysrhythmias, acute respiratory failure, and cardiac arrest. IV lipid infusions are a key intervention (Long et al., 2022). Anesthesia can also cause hypotension, bladder dysfunction, pruritus, neurological complications, and hypothermia (Balestrier et al., 2023). In a study it is stated that, "Perioperative thermal discomfort is often cited by patients as the worst aspect of their postoperative experience." (Aloysius et al., 2023, p. 2). POUR (postoperative urinary retention) is a common adverse effect after spinal anesthesia (Kolodziej et al., 2023). Postoperative nausea and vomiting (PONV) is a complication that needs to be remedied because it causes many problems such as "dehydration, electrolyte imbalances, cardiac arrhythmias, bleeding, hematomas, delayed wound healing, wound dehiscence, gastric content aspiration, esophageal rupture, emphysema, and bilateral pneumothorax." (Arslan & Celik, 2023, p. 1). Anesthesia also increases the risk of patients developing an adverse respiratory event (ARE), which is like that of opioid-induced respiratory depression, except it occurs postoperatively and is associated with anesthesia as an adverse effect (Broens et al., 2020).

Literature Synthesis

Multiple studies have examined the adverse effects of anesthesia and nursing interventions to address them. Both qualitative and case studies have been conducted measuring the adverse effects of general anesthesia and local anesthetics in elderly patients, adults, laboring patients and children. Some

studies focused on immediate and physical effects of general and local anesthesia whereas others focused on the long-term effects of anesthesia, like cognitive deterioration. Other studies tested specific nursing interventions and their effectiveness in reducing the adverse effects of anesthesia.

Design

Qualitative Studies

Balestrieri-Martinez et al. (2020) attempted to find potential risks associated with neuraxial anesthesia. It was found that it may lead to adverse neonatal outcomes in patients with pre-eclampsia and increase neonatal morbidity. Nakamoto & Hirose et al. (2019) examine the correlation between CRP (C reactive proteins) with postoperative complications. It also found that increased CRP levels do correlate with the severity of postoperative complications. The authors reported that the use of non-steroidal anti-inflammatory drugs, steroids, or B-blockers, and ERAS (Enhanced Recovery after Surgery) protocol reduced CRP levels. McCann & Soriano et al. (2019) examined general anesthesia and how it affects the neurodevelopment of newborns and children that were exposed to anesthesia, it found that there are associations between anesthesia exposure at a young age and neurocognitive deficits. There is still not enough clinical evidence to support this, but there seems to be a correlation between general anesthesia and brain development in children. Arslan et al. (2023) studied the effects of using aromatherapy, acupuncture, oral ginger intake, listening to music, and education to visitors in the prevention of postoperative nausea and vomiting (PONV) another complication that occurs after surgery, usually with general anesthesia. Berger et al. (2018) assessed preoperatively the patient's current level of ADLs and used the DSM-5 or Diagnostic and Statistical Manual of Mental Disorders – fifth edition to assess for delirium or other cognitive disorders. It could help recognize signs and symptoms of cognitive dysfunction due to anesthesia. White et al. (2024) conducted a small assessment and found that many nurses lacked sufficient knowledge about LAST (Local Anesthetic Systemic Toxicity). A live simulation, followed by assessment scores, aimed to increase nurses' awareness of LAST and its nursing interventions. Lipid infusions, an intervention for LAST (Local Anesthetic Systemic Toxicity), was studied for its effectiveness in reducing its effects. It proved to be an effective treatment measure (Long et al. 2022). Alatni et al. (2024) and Balestrieri-Martinez (2019) studied nursing interventions done for

laboring patients that suffered anesthesia induced toxicity. Its goal was to find the interventions that were most effective in treating its effects. Alatni et al. (2024) found that the position of the patient during the administration of spinal anesthesia influences the incident of PDPH (Post-dural puncture headache). Balestrieri-Martinez (2019) examined nursing interventions to manage or prevent adverse effects from anesthesia, such as bladder dysfunction, pruritus, neurological complications, and hypothermia. Nursing interventions for managing local toxicity include elevating the head of the bed, administering oxygen, increasing the rate of the mainline intravenous infusion, and ensuring airway protection. A high spinal block can occur due to an inadvertent dural puncture, catheter migration, or the administration of an excessive dose of local anesthetic. In such cases, elevate the head of the bed and, if applicable, position the uterus laterally to relieve pressure. Administer oxygen via a mask and provide ventilation through intubation, if necessary. Prompt management of hypotension with intravenous fluids and ephedrine may also be required. In some instances, the patient may experience a unilateral block or a patchy area that is not affected by the anesthetic. If the block is unilateral, reposition the patient so that the side requiring anesthesia is positioned lower. If no improvement in sensation is noted after an hour, notify the anesthesia provider for further evaluation and intervention. Pulmonary aspiration occurs when stomach contents are inadvertently inhaled into the lungs. Early identification of this complication is crucial, and nursing interventions should include prompt treatment, such as pharyngeal and tracheal suctioning, as well as assisting with intubation and mechanical ventilation. Although rare, failed intubation is a significant contributor to anesthesia-related maternal mortality. Difficult intubation is more prevalent in obstetric patients than any other patients. The immediate availability of specialized airway equipment is essential, along with applying pressure to the cricoid to facilitate airway management.

Kolodziej et al. (2023) studied POUR, also known as postoperative urinary retention, a common complication after spinal anesthesia and nursing-driving interventions such running tap water, ingestion of caffeinated hot beverages and poring warm saline on the perineal area can reduce POUR in patients. It found that these interventions were better than catheterization and successful in reducing POUR in patients undergoing surgery. Xiao et al. (2023) looked at the effects of prewarming interventions preoperative and recorded patient's family members messages to utilize them immediately postoperative

and found that it improved anesthesia recovery time in elderly patients undergoing spinal fracture surgeries under general anesthesia.

Case Studies

Torrie et al. (2020) looked at the effects of lipid emulsions on LAST complications resulting from general anesthesia. It looked to prove that lipid emulsions were an effective treatment for reducing LAST complications. In this case study, a 42-year-old women undergoing shoulder arthroscopy under LAST suffered LAST complications and the use of lipids emulsions reversed it.

Sample

Broens et al. (2020) conducted a study on the use of the Integrated Pulmonary Index in reducing occurrences of adverse respiratory events (ARE). A sample of patients 18 yrs. and older underwent opioids for treatment of postoperative pain and were monitored with the IPI. The IPI was the sample in the study that used information from a capnography (a special monitor that measures carbon dioxide levels) and pulse oximetry to provide values to nurses on the patients cardon dioxide, oxygenation, pulse rate, and respiratory rate. It proved to successfully reduce AREs'. Aloysius et al. (2023) did a hospital trial studying hypothermia and nursing interventions that remedied it. It took a sample of patients between the ages of 18 to 65 yrs. old who underwent elective surgeries under general anesthesia that lasted around three hours. Before and during the surgery, nurses wrapped the patients in thermal blankets and monitored them after the surgery for adverse reactions. Xu et al. (2021) conducted a study on the use of the humanized nursing model to care for a patient after undergoing anesthesia.

> Humanized nursing is the associated linkage between nurse and patient response to address the disease, and is characterized by using sympathy, self-respect, and kindness, as well as honoring patient autonomy, providing a friendly environment, and offering integrated care. A humanistic nursing approach demonstrates personal values, evolving occupational capability, and development of peace of mind. (p. 1)

It focuses on alleviating the patients' concerns and making them as comfortable as possible during their hospital stay to reduce postoperative complications. It used a sample of 50 glaucoma patients which were randomly separated into 2 groups, one group that practiced humanized nursing and a control group, that did not. Zhou et al. (2023) conducted a study on a sample of patients receiving gastric cancer surgery from January 3030 to 2022. They were separated into two groups, one that received evidenced-based early warning nursing model and one that did not; this acted as the control group. The use of the evidenced-based early warning nursing model results in quickest postoperative recovery for the patients, lower pain scores, reduced anxiety, and improved patient satisfaction. It formulates nursing plans for each patient based on common clinical nursing problems, clinical knowledge, and the patients' needs. Early warning nursing is the nurse's ability to judge the patient's safety and well-being through nursing procedures, risks, and the ability to observe early signs and implement preventative measures to prevent complication. Balakrishnan et al. (2023) also studied the potential of prewarming nursing intervention on reducing cases of Inadvertent perioperative hypothermia (IPH) or postanesthetic shivering (PAS). It conducted the study with a sample of patients 18 to 65 yrs. old that were undergoing elective surgeries under general anesthesia that lasted around 3 hours. Before and during the surgery, half the patients were wrapped in thermal blankets whereas the other half, or the control group, did not receive prewarming interventions. In a recent study by Kasputyte et al. (2021), cardiac surgery patients were divided into two groups, receiving either combined anesthesia (general and epidural) or general anesthesia alone. The study aimed to assess the impact of combined anesthesia on cognitive functions. The most common anesthesia-related complication observed was delayed neurocognitive recovery (dNCR), highlighting anesthesia's adverse effects. The study demonstrated that general anesthesia could cause undesirable adverse effects and negatively impact patients' health outcomes.

Purpose

This integrative literature review critically examines current nursing interventions aimed at mitigating the most frequent side effects of anesthesia, including adverse effects associated with general, combined, and local anesthesia postoperatively. It focuses on hypothermia, postoperative nauseas, and

vomiting (PONV), adverse respiratory event (ARE) cognitive issues, delayed neurological recovery, postoperative delirium in adults and children, effects in laboring patients, and the neurodevelopment of newborns and children exposed to general anesthesia.

Research Question

What are the most effective strategies for managing the adverse effects of anesthesia and be effectively incorporated into nursing care to enhance patient recovery and streamline the nursing process?

Methodology

This integrative review was conducted following the PRISMA 2020 guidelines. The inclusion criteria included being publish in English, internationally, and within hospital settings trials. The exclusion criteria were published older than ten years, non-English publications, theses and dissertations and nonacademic settings. To search, the key terms used were Anesthesia, Adverse Effects, postoperative care, and Nursing Interventions. Databases used were PubMed and ProQuest. Any article that did not align with post-anesthesia effects, was removed, allowing 42 articles to remain for screening. Post review, 22 articles did not meet the criteria for review, leaving 20 total articles.

Results

Local Anesthetic Systemic Toxicity (LAST) was present in a patient undergoing right shoulder arthroscopy. Two to three minutes after injection, the patient developed dense motor and sensory block. After 5-7 minutes, the patient described a metallic flavored test, anxiety and her right upper extremity insensate to touch and flaccid. Patient became hypertensive and a diagnosis of LAST was established. Intravenous Lipid Emulsion was infused for approximately 30 minutes. Within 5 minutes the symptoms of LAST quickly improved. Symptoms for LAST include tinnitus, dizziness or lightheadedness, confusion or agitation, numbness, blurred vision, and muscle twitching and tremors. Current research suggests that intravenous lipid emulsion (ILE) reverses LAST by capturing the anesthesia drug used from vulnerable organs and redistributing it for detoxification and excretion (Torrie et al., 2020)

Patients scheduled for glaucoma were divided in observation groups received humanized nursing. The day before surgery, the nurse collected and analyzed basic patient data such as education level. They worked with the patient and family member in an educational discussion explaining and analyzing the causes of negative emotions and enlightened them to alleviate concerns like relevant knowledge of glaucoma surgery including pictures, videos and slides about operation room environment. During pre-op, nurses helped patients' information and comforted them by holding hands, helping them to relieve the patient's apprehension of surgery. Using a SAS (Self-rating Anxiety Scale), TCR (Treatment Compliance Rate, and GCQ (General Comfort Questionnaire, PSQI (Pittsburg Sleep Quality Index), results suggest that humanized nursing can be effective in regulating patient's psychological state and enhancing cooperation reducing the rate of post operation complications. (Xu et al., 2021) In a study, patients were divided into two groups: one group received preoperative warming using PAW blankets (blankets with an integrated thermal warmer), while the other group did not. After undergoing surgery, all patients were immediately transferred to the Post Anesthesia Care Unit (PACU). The results showed that the core temperatures of patients who used the PAW blankets were significantly higher than those who did not. Additionally, only 1 patient in the warmed group developed hypothermia, compared to 43% of patients in the unwarmed group. These findings suggest that the nursing intervention of using warm blankets prior to surgery helps reduce postoperative hypothermia and shivering, which are common adverse effects of anesthesia. (Balakrishnan et al., 2023)

In a study conducted by Xiao (2023) published in *Alternative Therapies in Health and Medicine*, 200 elderly patients undergoing spinal fracture surgery were assessed. One hundred patients were placed in an observation group, receiving a combination of language arousal nursing (a technique to help patients regain consciousness after surgery or anesthesia) and thermal insulation nursing (a method to maintain body temperature). The other 100 patients made up the control group, receiving only thermal blankets. The results showed that the observation group had significantly shorter extubation time, awakening time, eye-opening time, and respiratory recovery time compared to the control group. Both groups experienced a decrease in systolic, diastolic, and mean arterial pressure

(MAP) following the intervention, with the observation group showing lower values. Additionally, the heart rate at 5 and 10 minutes post-extubation decreased in both groups, with the observation group having a lower heart rate than the control group. There were no significant differences in SPO2 levels between the two groups after the intervention. The observation group also reported milder pain and a lower incidence of anesthesia-related adverse reactions. These findings suggest that combining language arousal nursing with heat preservation nursing enhances anesthesia recovery in elderly patients undergoing spinal fracture surgery, leading to improved outcomes and fewer complications.

Burbridge et al., (2019) conducted an analysis on medications used in anesthesiology that reduce the adverse effects of anesthesia. It found that out of the 88 drugs in the analysis, 36 (40%) had been identified to be associated with adverse events. The adverse events consist of excipients having a perioperative allergic reaction. As a result, these drugs are used a lot in the operative setting and across a broad spectrum of hospitals.

In a study conducted by Lu (2024) published in *Advanced Science,* nanomedications are used in detoxifying overdosed anesthetics and treating related complications. Out of all the nanomedications available, lipid nano-emulsions continue to be the most used and successful mitigate severely cases of LAST. It was also found to have the least adverse effects associated with its admission. The study investigated other nanomedications and concluded that more research needed to be done to consider its effectiveness in treating anesthetic toxicity. (Lu et al., 2024).

In a narrative review conducted by Long (2023) published in *The American Journal of Emergency Medicine,* it found that administering IV lipid infusions has been shown to reduce the absorption of anesthesia into the body, helping to prevent neurological and cardiovascular complications associated with anesthesia. The narrative review provides a focused overview of LAST for emergency clinicians. It found a total of 98 articles that were determined to be relevant to emergent clinicians by author consensus and included in the narrative review. Patients with local anesthetic systemic toxicity (LAST) typically present with central nervous system (CNS) and cardiac signs and symptoms. Those at the extremes of age or with preexisting organ dysfunction are at a higher risk.

Factors such as inadvertent intra-arterial or intravenous injection, repeated doses, and higher doses of local anesthetics increase the likelihood of developing LAST. Early recognition and prompt intervention, including supportive care and the administration of 20% intravenous lipid emulsion, are crucial for effective treatment. Techniques such as using ultrasound guidance, aspirating before injection, and administering the minimum necessary dose of local anesthetic can help reduce the risk of LAST. These findings suggest that lipid emulsions, early recognition, and prompt nursing interventions are crucial in treating the adverse effects of anesthesia.

This study by Berger et al. (2018), titled *"Recommendations for the Nomenclature of Cognitive Change Associated with Anesthesia and Surgery (2018),"* focuses on establishing clear, standardized terminology for cognitive changes occurring after anesthesia and surgery, particularly in elderly patients. It recognizes that cognitive decline, such as postoperative cognitive dysfunction (POCD) and delirium, is commonly observed after surgery, especially in the elderly, and may last beyond recovery from anesthesia. The research stresses the importance of aligning terminology with that used for cognitive disorders in the general population, as outlined in the DSM-5 and NIA-AA guidelines. This study aims to improve communication among medical professionals, enhance clinical management, and encourage high-quality research in the field. The research also highlights the growing need for this classification due to the increasing number of elderly patients undergoing surgery. These findings suggest that the use of the DSM-5 to assess neurocognitive changes associated with the adverse effects of anesthesia is an effective nursing intervention.

A systematic review by Alanti (2024) examines the treatment and prevention of post-dural puncture headaches (PDPH), which can occur after spinal or epidural anesthesia. The study reviewed 345 publications from 2013 to 2023, focusing on various nursing interventions. Key findings include the effectiveness of oral pregabalin, intravenous aminophylline, left sided or semi-flower positioning, and caffeine for both treatment and prevention. However, neuraxial morphine and epidural dexamethasone showed limited effectiveness. Minimally invasive techniques, such as nerve blocks, were beneficial, and epidural blood patches remained the gold standard for refractory cases. Although

the review highlighted the need for larger studies to define optimal treatment approaches, the results suggest that these techniques are beneficial in the prevention of post-dural puncture headache (PDPH) induced by post-dural anesthesia.

In a literature review by Jung (2022), published by *Medsurg Nursing,* it examines the impact of nursing interventions in managing postoperative delirium. The review analyzed 19 studies, focusing on various nursing strategies. Notable interventions that were found to be effective include early ambulation, prompt removal of urinary catheters, ensuring restful sleep before surgery, dimming lights, clustering care, and minimizing noise levels. These approaches were shown to significantly reduce the incidence of postoperative delirium. While there is some inconsistency regarding the effects of nursing interventions on the duration and severity of delirium, length of stay, and mortality, the findings suggest that the effectiveness of the nursing interventions to improve patient outcomes remains high. Given nurses' critical role in recognizing and caring for patients with postoperative delirium, these interventions may be key to both preventing delirium and enhancing patient recovery.

A pilot study aimed to assess whether simple nursing interventions could reduce postoperative urinary retention (POUR) and the need for bladder catheterization in patients undergoing fast-track total hip replacement (THR) with spinal anesthesia. The interventions included the sound of running tap water, ingesting caffeinated beverages, and pouring warm saline over the perineal area. The patients that had trouble voiding were given nursing interventions. 53 patients participated in the study and 27 of them experienced difficulties voiding afterwards and underwent nursing interventions. Of the 27, 24 (51%) of the patients successfully voided following these interventions, while only 3 patients (6%) required catheterization. These findings conclude that these straightforward nursing interventions significantly reduced the need for bladder catheterization in patients after THR, promoting better patient outcomes. (Kolodziej et al., 2023)

In a systemic review by Arslan (2024) published in *The Journal of perianesthesia nursing*, it assesses the impact of nonpharmological nursing interventions on postoperative nausea and vomiting (PONV). The review analyzed 53 articles that focus on nursing interventions like acupuncture,

aromatherapy, eating ginger, and listening to music. It found that these interventions decreased the incidence of nausea and vomiting and increased the quality of life for patients. These findings suggest that these nursing interventions can reduce and prevent PONV and can continue to be employed in patients undergoing surgery.

This randomized controlled trial aimed to evaluate the effectiveness of continuous monitoring using the Integrated Pulmonary Index (IPI) in detecting and managing postoperative respiratory events. The study involved 80 patients who underwent continuous respiratory monitoring during the first postoperative night, with patients randomized to either an observational group (standard care) or an intervention group (IPI monitor). While the number of patients experiencing adverse respiratory events was similar between the two groups, the IPI group had significantly more nurse interventions to improve respiratory status. These interventions led to fewer and shorter respiratory events. Although the use of IPI did not reduce the overall incidence of respiratory events, the findings did improve patient management by enabling quicker and more frequent interventions. (Broens et al., 2021)

In a study by Gaudencio (2021) published by the *British Journal of Nursing*, it investigates nursing interventions for preventing and managing delirium in adult patients in intensive care units (ICUs). The review identified seven studies that explored both non-pharmacological and pharmacological interventions. The interventions included reorienting the patient to the current date, time, and place, promoting cognitive stimulation, reducing sensory deficits, removing catheters and physical restrictions as soon as possible, encouraging early mobilization, and involving the family. Most interventions focused on delirium prevention, emphasizing the importance of early identification and targeted monitoring by ICU nurses. The study concludes that training nurses and the broader clinical team in recognizing and preventing delirium is essential for improving patient outcomes. These findings can be used to treat postoperative delirium associated with the adverse effects of anesthesia.

In an article by Balestrieri-Martinez (2019), it discusses the critical role of nurses in managing complications associated with obstetric anesthesia. It emphasizes the importance of early identification and prompt intervention of complications such as hypotension, respiratory issues, and allergic reactions with a focus on the nurse's role in monitoring, recognizing signs, and providing immediate care. It also

found that uterine displacement, intravenous fluid bolus with plain isotonic solutions (e.g., Ringer's lactate), oxygen administration via mask, and the use of intravenous ephedrine or phenylephrine were effective in treating hypotension resulting from it. These findings present nursing interventions that can be used on laboring patients that have adverse effects to anesthesia.

In a study by Ha et al., (2018) it investigates the incidence and outcomes of postoperative delirium (POD) in patients undergoing major urologic cancer surgeries. The research uses a population-based approach to assess data on patients from various demographics and health backgrounds. It looked at the incident rate, hospital costs, and outcomes of POD in the patients that qualified for the study. The study concluded that postoperative delirium is a significant concern following major urologic surgeries, impacting both patient health and healthcare costs. These findings suggest there is a need for nursing interventions and strategies to prevent and manage delirium to improve patient outcomes and reduce associated healthcare expenses.

Discussion

Balakrishnan et al. (2023) demonstrated that wrapping patients before and during the surgery minimizes IPH (Inadvertent perioperative hypothermia). Only a small percentage (1.7%) of patients developed IPH. The intervention successfully minimized the adverse effects of anesthesia. (Balakrishnan et al., 2023).

There are many pharmacological interventions like dopamine receptor antagonists and sedatives that can alleviate PONV, however, non-pharmacological interventions can also be as effective. These non- pharmacological interventions can be done by any postoperative nurse. These interventions include acupuncture, aromatherapy, music therapy, and chewing on ginger or gum. All these interventions greatly decreased the incidence and severity of PONV. All of them had favorable effects on the patient's satisfaction levels and improved patient outcomes through the lessening of side effects and postoperative antiemetic related complications. Although these interventions are not widely used and no training programs have been put in place to teach nurses them, these nursing interventions have proven to be the best in effectively reducing PONV related to anesthesia. (Arslan, et al., 2023)

Integrated Pulmonary Index or IPI should be used to prevent and manage respiratory deterioration postoperatively. The IPI uses information from a capnography (a special monitor) and pulse oximetry to provide values to nurses on the patients' carbon dioxide, oxygenation, pulse rate, and respiratory rate. Although the IPI monitoring did not result in a reduction of the patients experiencing adverse respiratory events in comparison to standard clinical care, it did lead to a decrease in the number of respiratory events in patients that underwent the study. This proves that the use of IPI for respiratory deterioration should continue to be practiced in healthcare settings. (Broens et al., 2020)

Nursing interventions like ensuring that the patient get enough sleep, removing a urinary catheter and enforcing early mobilization after surgery have been used in the prevention and management of postoperative delirium. Nurses attempted to identify patient sleep schedules and decreased environmental stimulation by dimming lights, grouping care, and reducing loud noise to ensure the patient got sufficient sleep. The family was also educated and involved in the patient's care, which helped the patient feel more comfortable and reorient more easily with the psychological support provided. Reorienting the patient to the current date, time, and place after waking from surgery and promoting cognitive stimulation by asking questions of past and current events. Nurses can also reduce sensory deficits by encouraging the patient to wear their glasses or hearing aids if they use any. As well as this, nurses can remove any restrictive devices from the patient, if possible, because this encourages early mobilization of the patient. (Daun et al., 2023)

The best nursing intervention for laboring patients with hypotension from anesthesia is to place the patient on their side, give an IV bolus with isotonic solution, apply an oxygen mask, and get a physician's order to give intravenous ephedrine or phenylephrine, but most of the nursing interventions for laboring patients, consist of early recognition, changing patient position, providing oxygen, and increasing intravenous fluids. (Balestrier, et al., 2023) If these nursing interventions are put in place, this will improve health outcomes for the laboring patient and the baby.

Closure

Anesthesia is used in almost every procedure, whether it is sedation, or temporality stopping sensations to an area. Since it has many uses, many patients undergo it for quality care. However, anesthesia has the potential to cause adverse complications that can threaten the health and mortality of the patient. The best nursing interventions must be put in place to aid in managing and preventing the adverse effects of anesthesia. There are many different complications that anesthesia can cause so specific nursing interventions must be put in place for all of them. LAST, one of the more serious complications of anesthesia, can be remedied with the infusion of IV lipids. Many other nursing interventions for other complications include applying oxygen, giving fluids, changing patient positions, and seeing the signs early. All these nursing interventions are effective in reducing the adverse effects of anesthesia. This research will add value to the future of nursing by making postoperative care of patients who underwent anesthesia easier for the nurse to care for. If a nurse knows exactly how to care for a patient who is suffering from adverse effects, it will speed up the recovery process of the patient and prevent longer hospital stays and unintended issues after the procedure. For my oral presentation of my Signature Honors Project, I will bring this up to win over the audience looking over my research study. I will also bring up the significance of anesthesia in surgical and medical procedures and its correlation with multiple adverse health outcomes ranging from psychomotor and neurological affects.

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