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PERIOPERATIVE ANXIETY IN CHILDREN: NARRATIVE REVIEW

Andres Felipe Rojas Vásquez MD. Fundación Universitaria Juan N. Corpas

ABSTRACT Preoperative anxiety in children is common and can have negative effects on their overall surgical experience. Several factors, such as age, personality traits, and past medical experiences, can contribute to increased preoperative anxiety. Behavioral interventions, such as distraction techniques, parental presence at induction of anesthesia, and preoperative preparation programs, can be effective in reducing anxiety. Behavioral family preparation programs have been found to reduce the number of children requiring preoperative sedation, but they may not be practical for all centers. Anesthesiologists and child life specialists can play an essential role in reducing anxiety in children by interacting with them in an age-appropriate way, providing therapeutic play experiences, and offering developmentally appropriate language. Distraction techniques, such as non-procedural distracting talk, electronic devices, music, stories, and guided imagery, can also help children cope with anxiety. Pharmacological interventions, such as sedative premedication, should be used with caution, especially for children with neurodevelopmental disorders, due to potential drug interactions and increased risks of upper airway obstruction.

KEYWORDS : Perioperative Care ,Anxiety, Child, Preoperative Care, Pediatrics.

INTRODUCTION

Perioperative anxiety in children is a common phenomenon that affects a significant proportion of children undergoing surgery. Although these symptoms are not new, the observations of our esteemed anesthesiology colleagues from the 1940s and 1950s remain accurate and relevant today. In an article published in 1945, Dr. David Levy from New York described the symptoms of anxiety, fear, and maladaptive behaviors experienced by 20% of children after surgery. Since then, many studies have been conducted to address this issue, including psychological and pharmacological approaches. In this article, we will explore the causes of perioperative anxiety in children and examine some of the most effective interventions to reduce these symptoms and improve the well-being of children during and after surgery (1).

METHODS

Conduct a comprehensive search of relevant databases (e.g. PubMed, Cochrane Library) using keywords related to perioperative anxiety in children. In this case, some keywords might include "pediatric surgery," "anxiety," "preoperative anxiety," "postoperative anxiety," and "child." Review the titles and abstracts of the articles identified in the literature search to determine their relevance to the topic of perioperative anxiety in children. Select articles that meet the inclusion criteria, which might include studies that examine the prevalence of perioperative anxiety, risk factors for perioperative anxiety, and interventions to reduce perioperative anxiety. Organize and synthesize the extracted data to identify patterns and trends in the literature.

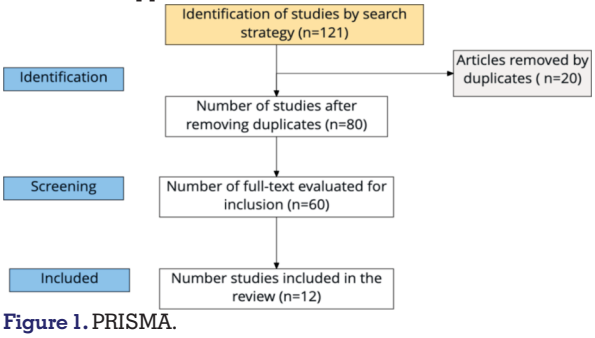

Figure 1. PRISMA.

Risk Factor

Preoperative anxiety in children is a feeling of apprehension, nervousness, or fear associated with heightened autonomic activity. Several factors interact to produce or worsen preoperative anxiety in a complex manner. Therefore, identifying children at high risk for preoperative anxiety should be a priority for practitioners in every practice setting. Younger children between 1 and 5 years of age are at the highest risk for anxiety. Children with high trait anxiety, low social adaptability, a shy and inhibited personality, anxious parents, and those with a previous history of poor-quality medical encounters are also at risk for preoperative anxiety. Adolescents often exhibit subtle anxiety behaviors that may not correlate well with physiologic indices indicative of anxiety, resulting in inadequate alleviation of anxiety unless unearthed via a careful preoperative interview. Pediatric anesthesiologists practicing in a pediatric setting are the most accurate at predicting anxiety. Several validated instruments exist to measure anxiety in children and parents in the perioperative period, such as the modified Yale Preoperative Anxiety Scale (mYPAS), the State-Trait Anxiety Inventory for children (STAIC), the Numeric Rating Scale (NRS), and visual analog scales (VASs). Measures of child behavior and temperament such as the EASI instrument, the Child Behavior Checklist (CBCL), and the Post Hospitalization Behavioral Questionnaire (PHBQ) accurately assess emotionality and changes in behavior during the perioperative period (2,3).

Neurodevelopmental Disorders

Neurodevelopmental disorders, such as autism spectrum disorder (ASD), attention deficit disorder/attention deficit hyperactivity disorder (ADD/ADHD), and Down syndrome, present unique challenges in managing perioperative anxiety in children. Children with ASD have deficits in communication, social interaction, and emotion regulation, which can result in heightened preoperative anxiety. To manage these issues, clear and simple language with accompanying visual aids, comfort items such as blankets or stuffed animals, and iPads can be helpful. Sensory hypersensitivity should also be considered, and patients should be assigned a private, quiet area with low lighting and stimulation. Pediatric anesthesiologists may need to use sedative premedication more frequently for children with ASD, and there may be differences in treatment patterns for these patients (4).

Behavioral Interventions

Anxiety is a common experience among patients undergoing surgery, and it can negatively affect their overall experience. There are two broad categories of perioperative interventions, behavioral and pharmacologic, to reduce anxiety. Behavioral interventions include distraction techniques, parental

presence at induction of anesthesia (PPIA), complementary therapy, and preoperative preparation programs. One study showed that child life preparation was the most effective, followed by play therapy, an operating room tour, and printed material. Behavioral family preparation programs can reduce the number of children requiring preoperative sedation, but they present logistic, resource-intensive, and financial challenges that may not be practical for all centers. Comprehensive web-based preparation strategies include innovative websites that provide information and train parents and patients on coping skills, relaxation, and distraction techniques. The WebTIPS program was well received by parents and children and found to be effective at reducing anxiety in parents and children at the time of anesthetic induction (5,6).

Pharmacologic Interventions

Pharmacological interventions for perioperative anxiety in children have been widely studied and used to improve the quality of anesthesia and reduce negative behavioral changes after surgery. Sedative premedication is commonly used to reduce preoperative anxiety in children. Midazolam is a benzodiazepine that is often used as an anxiolytic, amnestic, and sedative premedication for children. It has a rapid onset, short half-life, and effective anxiolysis. Studies have shown that premedication with midazolam is safe and effective at reducing preoperative anxiety in children, with negligible side effects. The anxiolytic effect of oral midazolam 0.5 mg/kg was demonstrable 15 minutes after administration, and the amnestic effect measured by picture recall was impaired after 10 minutes. However, side effects such as loss of balance, blurred vision, and dysphoric reactions were observed only in the higher oral dose groups. Children with obstructive sleep apnea syndrome, compromised airways, or difficulty breathing may need lower doses and should be monitored carefully following administration (7).

Ketamine is another medication that is often used for sedation in children. It is effective when used intranasally, orally, and parenterally. Intramuscular ketamine is often used to premedicate combative children or adolescents who refuse medication by any other route. However, it results in longer recovery times and more vomiting compared with intravenous administration. Additionally, intramuscular ketamine may be associated with a significantly higher incidence of respiratory complications compared with the intravenous route, possibly due to the prolonged duration of action and excessive salivation. Ketamine is often combined with midazolam for premedication, and it improves cooperation during anesthetic induction compared with midazolam alone (8).

Dexmedetomidine has also been successfully used as premedication, but it has some differences compared with midazolam. It is an alpha-2 agonist that provides sedation and analgesia. The most significant advantage of dexmedetomidine is that it does not cause respiratory depression. Dexmedetomidine has been shown to reduce preoperative anxiety and improve the quality of induction of anesthesia in children, but it is associated with a higher incidence of bradycardia and hypotension. Dexmedetomidine is often combined with other sedatives to achieve better results (8,9).

Propofol is a short-acting intravenous anesthetic that can be used as a premedication for children. Propofol has sedative, hypnotic, and amnestic effects, making it a good choice for preoperative sedation. However, its use as a premedication is still limited due to its higher risk of adverse events such as hypotension, apnea, and laryngospasm (9).

Intranasal administration of sedatives is another option for premedication in children. Intranasal administration of midazolam, ketamine, and dexmedetomidine has been shown to be an effective and safe method of premedication. Intranasal administration of sedatives provides a rapid onset of action and avoids the discomfort associated with intramuscular injection (9,10).

Opioids are often used for analgesia in children undergoing surgery. Morphine, fentanyl, and remifentanil are commonly used opioids for analgesia in children. Morphine has been shown to be effective in reducing postoperative pain, but it is associated with a higher incidence of respiratory depression and nausea and vomiting. Fentanyl and remifentanil are short-acting opioids that have been shown to provide effective analgesia with fewer side effects than morphine (10).

Outcomes Of Perioperative Anxiety

Perioperative anxiety is a common occurrence in children undergoing surgery, and pharmacological interventions have been widely studied to alleviate this anxiety. Among the medications used for premedication, midazolam is a benzodiazepine that has been shown to be safe and effective in reducing preoperative anxiety in children with minimal side effects. Ketamine, which can be administered intranasally, orally, and parenterally, is often combined with midazolam to improve cooperation during anesthetic induction. Dexmedetomidine, an alpha-2 agonist, provides sedation and analgesia without respiratory depression, but it is associated with a higher incidence of bradycardia and hypotension. Propofol is a short-acting intravenous anesthetic that has sedative, hypnotic, and amnestic effects but has a higher risk of adverse events. Intranasal administration of sedatives, including midazolam, ketamine, and dexmedetomidine, has been shown to be effective and safe, providing a rapid onset of action and avoiding the discomfort associated with intramuscular injection. Morphine, fentanyl, and remifentanil are commonly used opioids for analgesia in children undergoing surgery, but morphine is associated with a higher incidence of respiratory depression and nausea and vomiting (11,12).

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