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Pediatric Distraction Methods for the Perioperative Period

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Executive Summary

Introduction of Problem

Perioperative anxiety affects 60-80% of the pediatric population and can produce a high incidence of maladaptive and regressive behaviors for up to six months postoperatively (Mountain et al., 2011; Perry et al., 2012). Pediatric anxiety is defined as feelings of nervousness, work, and tension specifically relating to an impending surgical procedure (Chow et al., 2019). Pediatric anxiety may be mitigated by the use of pharmacologic or nonpharmacologic interventions such as parental presence, tablet devices, play therapy, or a variety of other techniques (Chow et al., 2016; Lee et al. 2016; Seiden et al., 2014). Memorial Hospital Belleville frequently performs procedures on pediatric patients but did not have a resource guide to aid providers in the appropriate selection of distraction techniques. Due to a lack of supplemental resources regarding this patient population, the anesthesia providers at Memorial Hospital Belleville were provided with a presentation consisting of a poster, educational resource tool, and PowerPoint presentation regarding pediatric anxiety and interventions. This project aimed to increase the providers' knowledge of age-appropriate interventions to be utilized for this patient population.

Literature Review

Pediatric anxiety and complications.

Pediatric anxiety may manifest as crying, agitation, screaming, verbally protesting, dissociation from normal behaviors, and changes in breathing patterns (Lee et al., 2012; Scully, 2012). These behaviors may result in a lengthened period of anesthetic induction, breath holding, laryngospasm, and increased pain during the induction of anesthesia (Chow et al., 2019; Scully, 2012). Unrecognized or untreated anxiety preoperatively may be observed as acute behavior

changes, emergence delirium, and increased pain, as well as hormonal and immunological changes which can result in delayed wound healing, immunosuppression, and an increased risk for postoperative infections (Kar et al., 2015). Behaviors such as separation anxiety, nightmares, eating disorders, aggression towards authority, nocturesis, and an increased fear of doctors may last for weeks to months after surgery (Chow et al., 2019; Dwaireji et al., 2019; Lee et al., 2012).

Erikson's stage of development and age-appropriate interventions.

Erikson's five stages of development include trust versus mistrust, autonomy versus shame and doubt, initiative versus guilt, industry versus inferiority, and identity versus confusion (Admend et al., 2011). Knowledge of these stages aids the anesthesia provider in identifying how the child will most likely perceive and interact with their environment, thus helping to tailor the type of anxiolytic methods and conversation appropriate for their developmental level (Ahmend et al., 2011; McLeod, 2018). Pediatric patients at the host site commonly fall into the initiative versus guilt stage, with a commonly associated age range of three to five years old. As play is central to this stage, the potential for nonpharmacologic distraction methods is appropriate and likely to be beneficial for this group (McLeod, 2018).

Pharmacologic methods.

Traditionally, pharmacologic methods such as midazolam, ketamine, and dexmedetomidine have been utilized for the treatment of preoperative anxiety. These medications, while effective, carry a significant risk of negative side effects (Mountain et al., 2011; Perry et al., 2012). To mitigate the risks associated with their administration, ideally the use of pharmacologic methods should be used in conjunction with nonpharmacological methods or reserved for patients whom nonpharmacologic therapies have proven unsuccessful.

Nonpharmacologic methods.

Research has demonstrated that utilization of nonpharmacologic interventions such as introducing the child to the anesthetic mask, play, parental presence, music therapy, and bubbles are as effective as pharmacological methods for the treatment of pediatric anxiety (Boles, 2013; Farrell et al., 2013; Gupta et al., 2017). Specifically, the use of audio-visual media via a tablet or smartphone is equivalent or superior to pharmacologic methods in decreasing pediatric anxiety and increasing acceptance of the anesthetic mask for the induction of anesthesia (Dwaireji et al., 2019). Respecting the child's choice of distraction method and seating preference increases cooperation and promotes a more positive experience for the child (Farrell et al., 2013; Rodriguez et al., 2017; Seden et al., 2014).

Project Methods

Purpose and goals.

The purpose of this project was to bring awareness to the potential negative complications of untreated pediatric anxiety as well as to review available pharmacologic and nonpharmacologic distraction techniques. The purpose of the educational resource tool was to supply anesthesia providers and perioperative staff with a variety of distraction techniques, allowing providers to individualize perioperative care to the pediatric patient. The goal of this project was to encourage anesthesia providers to implement nonpharmacologic methods as first-line therapy or in conjunction with medications to decrease pediatric anxiety.

Project setting.

This project was implemented in the break room at a mid-sized hospital in Southern Illinois. The project was a non-experimental single-group design aimed to review the current literature guidelines. The study group included convenience sample of certified registered nurse

anesthetists (CRNAs), student registered anesthetists (SRNAs), anesthesiologists, and registered nurses (RNs).

IRB information.

The Southern Illinois University Edwardsville International Review Board (IRB) reviewed and approved this project on August 23, 2021. The Belleville Community IRB reviewed and approved this project on September 22, 2021.

Evaluation

Tools and measures.

An educational tool and resource guide was created and distributed to the anesthesia and perioperative staff at Memorial Hospital Belleville on October 19, 2021. A poster board, quick reference tool, and PowerPoint presentation were discussed with providers during their lunch break in small groups. Following the presentation, participants were asked to complete a voluntary and anonymous 10-question survey assessing the benefit and utility of the information provided during this presentation. Due to COVID-19 restrictions, copies of the educational tool, PowerPoint, and survey were emailed to staff members who were unable to attend the in-person meeting. Surveys were collected after the meeting and during the following weeks via email. A total of 17 post-implementation questionnaires were collected and included in the analysis.

Results.

As anticipated, demographic information showed that the majority of the participating providers were CRNAs (n=11), followed by SRNAs (n=3), anesthesiologists (n=2), and RNs (n=1). Of this sample, results indicated that approximately two-thirds of providers were aware of the effects pediatric anxiety can have during the postoperative period. Approximately one-third

of providers were not aware of these effects, which suggests that this project could benefit providers of all experience levels and educational backgrounds.

Questions 4 through 9 were formatted using a semantic differential scale of 1-10, with 1 representing “not at all” and 10 representing “very likely”. These questions were focused on the knowledge gained from the related presentation, the ease of interpretation, and the likelihood of utilization of the reference tool and incorporation into the provider’s current practice. The mean scores ranged from 9.06 to 9.73 out of 10, indicating an overall positive response to the presentation and probable utilization of the materials provided. Question 5 had the lowest mean response at 9.06 to the question “Do you feel this presentation improved your ability to differentiate the pediatric stages of development and select an appropriate intervention,” suggesting for future educational endeavors that increased focus on this topic could be beneficial.

These results demonstrated the largest knowledge gap resided with CRNAs, as 45% (n=5) responded “no” when asked if they were previously aware of these effects. Of these five providers, a mean score of 9 was obtained from question 5 relating to a perceived increase in knowledge relating to this topic, demonstrating a positive response to the presentation and reference tool. Overall, providers also expressed an increase in feelings of preparation for dealing with pediatric patients as a result of this presentation, with a mean score of 9.12 for question 6.

Limitations.

Major limitations of this project include facility-enforced COVID-19 restrictions regarding group meetings as this negatively impacted the ability to present this project to the anesthesia and perioperative nursing staff. Due to the inability to gather in groups, provider engagement and

availability were decreased, potentially limiting knowledge gained and utilization of the presented reference tool. In an attempt to reach additional providers who were unable to attend the implementation meeting, resources were sent out via email with both presenters' contact information for the return of surveys. Lack of accessibility and provider participation limited the number of surveys returned immediately following the presentation as well as in the weeks following via email, potentially affecting the results of this study. This project did not track the provider's utilization of the techniques provided and did not track patient-specific factors such as preoperative and postoperative anxiety scores or negative symptoms identified in the PACU in the subsequent months following the implementation of the project. Single facility implementation is also a limitation of this project.

Impact on Practice

The results of this project demonstrated that providers were willing to implement nonpharmacologic distraction techniques to decrease pediatric anxiety. The initial impact of this project was to provide a clinical resource tool to increase provider knowledge of techniques to decrease pediatric anxiety and encourage the initial utilization of nonpharmacologic methods. Additionally, provider engagement created increased communication regarding obtaining nonpharmacological tools, such as mask scents, approved for order and stocking in pediatric anesthesia carts. The long-term impact of this project includes the continued use of the techniques provided and potential decreased cost to the facility and improvement of patient outcomes.

This project has the potential to be replicated in the future at this facility or a larger facility when restrictions to group meetings have been dissolved. As the assessment and treatment of pediatric anxiety spans the entirety of the perioperative process, this project could be expanded

to include the pre- and post-operative nursing staff. This project would provide a base for future scholastic achievement and can be created to include a review of postoperative outcomes such as the incidence of emergence delirium and other maladaptive behaviors previously identified from untreated anxiety. This could provide insight into the effectiveness of the interventions provided by providers throughout the spectrum of the perioperative process.

Conclusion

The majority of pediatrics patients will experience anxiety during some stage of the surgical experience, potentially leading to negative consequences if left unrecognized or untreated (Mountain et al., 2011; Perry et al., 2012). Nonpharmacologic interventions such as play therapy, audiovisual media, parental presence, music therapy, and bubbles used alone or in combination with medications have proven to be as effective if not more effective at treating pediatric anxiety as traditional pharmacologic methods used in isolation (Dwaireji et al., 2019). To encourage provider utilization, an educational 1-page reference tool and laminated PowerPoint were developed, presented, and placed on the pediatric anesthesia carts. A post-implementation questionnaire was distributed to assess the effectiveness of the education provided to staff members in pharmacologic and nonpharmacologic methods, identifying age-appropriate interventions, and willingness to incorporate these into their practice. Positive results indicate provider buy-in and willingness to employ new techniques as well as build a foundation for future projects regarding this important topic.

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