PREOPERATIVE EDUCATION AND THE REDUCTION OF PARENTAL ANXIETY

by

Sherry Bernardo

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Approved by:

_____
Donna Kazemi PhD, RN
Chair
School of Nursing

_____
Karen Lucisano PhD, RN, CRNA
Carolinas Healthcare System

_____
Gail Harris, DNP, RN, PNP-C
Carolinas Healthcare System

_____
Rob Roy McGregor, PhD
Belk College of Business

_____
Michael Moore, PhD
College of Health and Human Services

ABSTRACT

SHERRY BERNARDO. Does a standardized preoperative teaching plan delivered by a Certified Registered Nurse Anesthetist (CRNA) and Child Life Specialist (CLS) prior to the pediatric OR experience decrease parental anxiety more than when preoperative teaching occurs with a Child Life Specialist alone. (Under the direction of DR. DONNA KAZEMI)

Background: One of the most frequently reported emotions in children in the setting of surgery or a medical procedure is anxiety. Currently, many interventions are used to assist with the perioperative reduction in anxiety for both parent and child. Perioperative teaching has been shown to decrease the anxiety level of the parent, in turn decreasing the anxiety level of children prior to surgery.

Methods: A quasi experimental study was conducted involving 50 parents of children having surgery at a Same Day Surgery Center. Twenty-five of the parents were educated by a CLS with 25 receiving education from a CLS and a CRNA. The Amsterdam Preoperative Information and Anxiety Scale (APAIS) containing six questions was administered before and after education to each group. Reduction in anxiety was compared between the two groups to determine if there was a significant difference regarding parental anxiety when a Certified Registered Nurse Anesthetist was involved in the standardized teaching plan.

Findings: There was no significant reduction in parental anxiety when the two teaching groups were compared. A significant reduction in parental anxiety was noted with regard to surgical anxiety when a CRNA was included in teaching with a standardized pediatric preoperative teaching plan.

Conclusion: A multidisciplinary approach to teaching prior to the operative experience was beneficial in reducing parental anxiety.

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CHAPTER 1: INTRODUCTION

Historically, the relationship between patients, their families and healthcare providers has been autocratic, with all decisions regarding care left to the provider in charge (Kuo et al., 2012). With advances in technology and the prevalence of information available via the internet, relationships are changing. Healthcare continues to evolve as patients and families become more active in their health related decision making and plans of care. A family-centered approach to healthcare has become the norm in many healthcare facilities, especially those facilities that specialize in pediatric care (Kuo et al., 2012).

The Institute of Family Centered Care was founded in 1992 with the purpose of empowering families to participate and form healthcare partnerships to meet the needs of the patient (Webster & Johnson, 2000). Family Advisory Councils are now a mainstay in large children's' hospitals nation-wide. The creation of such councils allow parents to become more actively involved in the care of their children. Healthcare partnerships between patient and healthcare professionals are now the emerging trend (Kuo et al., 2012).

In 2001, the Institute of Medicine (IOM) landmark report, *Crossing the Quality Chasm*, recommended a redesign of the American healthcare system. One of the six aims for quality improvement in healthcare is patient centeredness (Institute of Medicine, 2001). In the pediatric domain, patient centered care is family focused. The IOM report promotes high quality healthcare environments by recommending fundamental changes

to the American Healthcare System. The implementation of a patient centered approach is considered an opportunity as well as challenge to help healthcare advance to a twenty-first century system capable of delivering safe, effective, and equitable healthcare (IOM, 2001).

To fulfill the patient centered approach to care recommended by the IOM, effective communication between patient and caregiver is essential (IOM, 2001). Care that meets the needs and expectations of patients is a key attribute of quality care but clinicians and patients do not consistently talk about patient concerns (Bergeson & Dean, 2006). The significance of effective communication and partnering with patients in their care cannot be overstated. This quality endeavor is tied to reimbursement. The Centers for Medicare and Medicaid Services (CMS) in partnership with the Agency for Healthcare Research and Quality (AHRQ) created the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey to evaluate care from the perspective of the patient (Studer, Robinson & Cook, 2010). The HCAHPS survey provides a standardized measure for patients' perspectives on hospital care. HCAHPS was developed to replace the Press Gainey survey as a reporting measure for the patient's hospital experience (Zusman, 2012). Three goals shape the HCAHPS survey. These goals include evaluation of the patient's perspective on the care they have received; public reporting to increase transparency across institutions; and improvement in the quality of health care (Zusman, 2012). Twelve of 21 questions on the HCAHPS Survey address communication and patient topics and are heavily tied to insurance reimbursement.

The importance of effective communication in the preoperative setting is evidenced in the literature (Kindler, Szirt, Sommer, Häusler & Langewitz, 2005). This is particularly true in the pediatric setting. Induction of general anesthesia and the surgical process can be a distressing event for both children and parents. The induction of anesthesia may be the most stressful procedure a child experiences during the entire perioperative period (Kain et al., 2004). It is estimated that approximately 66% of all children undergoing general anesthesia and surgery may experience postoperative behavioral changes up to two weeks after their operative experience (Fortier, Johnson, Timmons & Weatherford, 2010). Perry, Hooper and Masiongale (2012) found that many interventions, such as the use of anxiolytics, distraction and play are used to assist with the reduction in anxiety for both the parent and child. The result of the findings were that no one modality has been identified as a superior technique to decrease anxiety (Perry et al., 2012). A classical work related to the field of anesthesia and patient anxiety has suggested that even though many modalities such as diversion, play and anxiolytics exist that they are not routinely used (Kain, Wang, Mayes, Caramico & Hofstadter, 1999). High levels of anxiety that continue to exist after the postoperative experience have been identified as predictors of postoperative behavioral issues that can persist for 6 months after the procedure (Vagnoli, Caprilli, Robiglio, & Messeri, 2005).

Problem Statement

The use of play and diversion therapy is the current method to deliver pre-surgical education for children and their families at the Same Day Surgery Center affiliated with a large pediatric hospital in which the study was conducted. A Child Life Specialist (CLS) is the primary provider of this education. The provision of child life services is a quality

benchmark of an integrated patient and family-centered health care system (Percelay et al., 2014). A CLS is a baccalaureate prepared family advocate who concentrates on the parent/child/family interaction. Child Life Specialists focus of the interplay of the health care environment with the healthcare provider and the progression of children toward a state of wellness (Percelay et al., 2014). In the current Same Day Surgery setting, the CLS is the sole provider of education to parents and children prior to the operative experience. The CLS is educated in many domains on the growth and development of children but their educational training does not include education on the pharmacology of anesthesia or the flow of activities in the operating room (Percelay et al., 2014).

Recognizing the importance of the provision of effective and accurate information to parents and children during the preoperative period, an interdisciplinary approach to education is optimal. Cole, Diener, Wright and Gaynard (2001) have found that Child Life Specialists are viewed as important for patient psychosocial well-being but have been perceived as being more beneficial for the activity and entertainment of children rather than educational purposes. Child Life Specialists perceive the education the child and parent as a CLS responsibility significantly more often than nurses and physicians (Cole et al., 2001).

Purpose of the Project

The purpose of this project is to compare the perceived anxiety level differences of parents provided with a therapeutic play technique delivered by a CLS to a standardized teaching plan addressing anesthetic and surgical concerns taught by a CLS and a CRNA. The overall goal of this project is to demonstrate which approach is more effective in decreasing the anxiety level of the parent. We theorized that direct benefits

of the standardized teaching plan will be a consistent approach to preoperative teaching concerning anesthetic considerations that will include the anesthesia provider, as well as the Child Life team for therapeutic play. The goal was to decrease parental anxiety by adopting an interdisciplinary approach and the use of a standardized teaching plan provided by a CLS and CRNA. The reduction in parental anxiety will in turn become a positive force in the reduction of the child's anxiety (McCann & Kain, 2001).

The current practice at the Same Day Surgery Center is for the CLS to deliver an interactive teaching plan based on therapeutic play to parents and children in the preoperative holding area prior to surgery. Prior to surgery, parents and children have minimal interaction with the surgical team. The CLS has become the institutional "advocate" for the parent and child during the preoperative and operative experience. The role of the advocate for the child and family can often be confused when the operative plan presented by the CLS is in conflict with the operative plan of the surgical team.

Parents continue to experience anxiety as they are separated from their child for the surgical procedure and anesthesia induction (Kain et al., 2004). This project was designed to develop and test a new standardized approach to preoperative parental education. The goal of the education was to decrease the parental anxiety that accompanies separation of children and parents as the child is taken to the operating room by the surgical team. Providing an avenue for parental education may in turn decrease their child's anxiety.

Significance of the Project

Anxiety is one of the most commonly reported emotions in children when faced with surgery or a medical procedure. It has been projected that 60% of children suffer from anxiety in the preoperative period (Fortier et al., 2010). Parents often offer no help in the reduction of their child's anxiety as they themselves do not always know what to expect during the anesthetic and surgical procedure. Parents often do not know how to answer the questions their children pose as they are whisked off to the operating room or unfamiliar procedure room. Preoperative education is offered in many pediatric healthcare settings, but often not by those involved in or preforming the procedures (Chorney, 2010). Because of their unique knowledge and expertise, education provided by the institution in which the procedure is being performed in and provided by an interdisciplinary team of healthcare professionals is necessary to ensure that parents are adequately prepared for their child's exposure to anesthesia and the events that occur in the operating room (Orchard, Curran & Kabene, 2009).

In the study environment, a CLS teaches anesthesia options and terminology from a coloring book and flash card photos which address the anesthesia and surgical portion of the operative experience. Each anesthetic and surgical experience may have unique components known only to those involved in the procedure. As the CLS may not have this expertise, the opportunity to provide erroneous information to an already anxious parent or family is possible. Due to the interdisciplinary nature of the intervention, this scholarly project was conducted in partnership with the Department of Anesthesia and Department of Child Life Services to examine the effectiveness of a

preoperative teaching plan taught with a multidisciplinary approach by a CLS and CRNA.

Research Question

The primary clinical question for this scholarly project was as follows. Does a standardized pediatric preoperative teaching plan delivered by a Certified Registered Nurse Anesthetist and Child Life Specialist decrease parental anxiety more than preoperative teaching delivered by a Child Life Specialist alone.

Project Objectives

The primary objective of this project was to evaluate and compare the role an interdisciplinary approach to preoperative education plays on the reduction of parental anxiety prior to the pediatric surgical experience. The goal of this project was to decrease parental anxiety by 20% related to the anesthetic and surgical process when a standardized teaching plan was delivered by a CRNA and CLS versus the currently used method of therapeutic play method delivered by a CLS alone. By decreasing parental anxiety with a standard interdisciplinary teaching approach to preoperative education, the author hypothesizes there will be a decrease in parental anxiety. This will be accomplished by exposing the parent and child to a consistent approach to the operative experience.

At the current time, preoperative teaching to parents is provided by a CLS. Props, coloring books and pictures are used as teaching tools. All preoperative teaching is conducted by the Department of Child Life without prior information provided from the Department of Anesthesia or the Surgical Services division. The current format for teaching by the CLS is to interact with the child by showing the child and parent pictures

of the operating room and allowing them to feel, play and place stickers on the anesthesia mask. A standardized teaching plan does not currently exist in CLS teaching sessions as the interaction with the parent and child guids the direction of the teaching.

CHAPTER 2: LITERATURE REVIEW

A systematic review of the literature was conducted using the keywords: pediatric, preoperative education and parental anxiety. The search terms were limited to full text articles for the years 2004-2014 in Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Direct Science databases. In the three databases, 57 peer reviewed full text published articles, written in the English language were identified that contained the identified keywords.

Fifteen studies were analyzed and met the inclusion criteria of routine preoperative teaching and parental anxiety reduction. Inclusion criteria consisted of full text articles written within the specified timeframe and addressing the keywords used in the search terms. Articles that were not pertinent to pediatric patients and the operative setting were excluded. Ten of the 15 studies were Level I or II evidence, with one of the studies being a level IV case control study (Stillwell, Fineout-Overholt, Melnyk & Williamson, 2010). Ten Level I and II studies, of the articles that met the inclusion criteria were included in the literature review for this project.

One of the Level I studies in the review examined the benefit of preoperative teaching and the reduction of parental and child anxiety (Heckmann & Beauchesne, 2013). This meta-analysis examined over 40 children's hospitals and 219 special interest groups representing the pediatric surgical population. The findings support the view that preoperative preparation is an important component of the surgical experience not only for the parent but the child. This study was important in the support of preoperative

education due to the large number of children's hospitals that were included in the findings.

The literature has also described the benefits of preparation in terms of reducing pre and postoperative anxiety for children and parents, and of parental satisfaction (Perry et al., 2012). The literature has shown that the reduction of parental anxiety will ultimately decrease the anxiety level of the child and improve overall outcomes (Kain et al., 2004). Cuzzocrea et al. (2013) support playful dramatization of the operative procedure to decrease parental anxiety. The findings support reduction in the anxiety level of the parent and child, which can promote compliance of pediatric participants with surgical procedures (Cuzzocrea et al., 2013).

Fincher, Shaw & Ramelet (2012) conducted a single-blind randomized control trial consisting of 73 care givers. The findings demonstrated that preoperative preparation was proven to be more beneficial for the parent than the child (Fincher et al., 2012). A study examining the use of preoperative audiovisual aids shown to parents and children immediately before the pediatric induction concluded that this method of preoperative teaching can be beneficial in reducing the child's anxiety. Additionally, this study confirmed that anesthetists may be better able to predict child anxiety than parents (Berghmans et al., 2011). Moreover, an article describing the role of the Nurse Practitioner in preparing families for pediatric outpatient surgery concluded that preoperative education programs are beneficial in the reduction of anxiety of parents and children prior to surgery (Frisch, Johnson, Timmons & Weatherford, 2010).

A systematic review of randomized control trials (RCT) compared the effectiveness of media-based patient education with regard to anesthesia. Fifteen RCT

with 1506 subjects examined anxiety before and after education in those patients receiving anesthesia (Lee, Chui & Gin, 2003). This review of the available literature supported the use of videos and printed information for patient education prior to surgery. A randomized control trial that examined psychoeducational preparation of 203 Chinese children prior to surgery supported the effectiveness of therapeutic play intervention and parental involvement as a means of preparing children for the surgical process (Li, Lopez & Lee, 2006). A Level I RCT concluded that audiovisual information is an effective method for the reduction of parental anxiety (McEwen, Moorthy, Quantock, Rose & Kavanagh, 2007).

The literature search to support this project returned ten articles that met all inclusion criteria, were Level I or II evidence and provided relevant information concerning the project topic. There is minimal information available that addresses preoperative education and the reduction of anxiety with regard to a particular educator role. The role of the CLS was rarely mentioned in the literature and appeared only in literature dated after 2008. Of relevance, when conducting this literature search was the inclusion of a study by Kain, Wang, Mayes, Caramico and Hofstadter (1999) as a reference in the majority of the literature addressing children, anxiety and preoperative education. A Level I study by Kain et al. (1999) was included in the review due to the numerous references to the original article throughout all Level I and II studies.

The literature suggested that numerous methods exist to decrease anxiety in parents and children. Preoperative teaching, the use of audiovisual aids, anxiolytics and parental involvement were found throughout the literature to support the findings of this project. Therapeutic play was discussed as was parental involvement to decrease child

anxiety. Child Life Specialists were rarely mentioned in the literature that was reviewed. Preoperative education was discussed as an effective modality to decrease anxiety in numerous articles. The work of Frisch et al. (2010) also supports the role of the Nurse Practitioner with regard to a preoperative education program and the reduction of anxiety.

Literature support for the inclusion of a CLS as a primary role for preoperative education was not found during the literature search. Cole et al. (2001) found that although Child Life Specialists play an important role on the psychosocial care of hospitalized children and their parents, nurses and physicians viewed the CLS role as one of play and entertainment. Percelay et al. (2014) recognized a CLS as an important contributor to an organization's effort to meet the standards set forth by the Joint Commission in promoting a patient and family centered care approach to healthcare. Sorensen, Card, Malley, and Strzelecki (2009) promoted the use of multidisciplinary teams to increase positive outcomes for parents and child.

Conceptual Framework

In an effort to accommodate a family-centered approach to healthcare, the Department of Anesthesia and Department of Child Life joined forces to develop an approach to address the education of parents and children prior to the operative experience. This project utilized Lewin's Change Theory (1942) to facilitate the development and implementation of a standardized preoperative teaching plan (Sare & Ogilvie, 2010). Lewin has identified three stages that will become central to institute the change necessary to establish a new policy that will promote education as an avenue to decrease parental anxiety. Unfreezing, change and refreezing are the three stages of Lewin's theory that help guide the human processes. Attitudes and thoughts of

healthcare providers will help develop and promote the use of a standardized teaching plan. This teaching plan will help achieve the desired goal of reducing parental anxiety with regard to the anesthetic and surgical process (Sare & Ogilvie, 2010).

The unfreezing stage will seek to change the preoperative educational process that currently exists at the Same Day Surgery Center (Sare & Ogilvie, 2010). As Lewin states in his theory, the overarching task during the unfreezing stage is to release the old patterns that now exist as barriers to change (Sare & Ogilvie, 2010). This will be accomplished by educating current staff regarding the benefits of an interdisciplinary approach to pediatric preoperative education. A preoperative education policy does not currently exist in the study environment. The positive forces that recognize the need for education in the unfreezing stage will be the presence of Child Life teammates in conjunction with a CRNA to promote a family centered approach in the surgical services area. Child Life Specialists as well as the CRNAs involved in the care of the pediatric patient in the OR will help be the drivers of the new process. The negative forces will comprise those who believe the current educational process is sufficient. These healthcare professionals will offer many reasons to validate their concerns that the current teaching and play modality of education by the CLS is a sufficient form of education.

After unfreezing has occurred, it is now necessary to move to a new level of thinking (Schein, 1995). During this phase it will be necessary for the CLS and CRNA to promote a family centered care approach to the surgical staff. In stage II, the change agents who consist of all surgical staff will identify the need for a family centered approach. The surgical staff will adapt as well as identify with the new attitudes, beliefs and practice initiatives that will promote preoperative education by a CRNA prior to the

surgical experience in the operating room. During this stage, the interdisciplinary team will need to come together for a similar way of thinking to promote acceptance, as well as practice changes. This acceptance will accommodate the role of the CRNA as the primary educator and change agent of the current educational process.

The third stage of Lewin's Change Theory will solidify the new patterns, practices, protocols, attitudes and beliefs developed during the second stage of change (Schein, 1995). During the refreezing stage, it will be necessary for staff to acclimate to the new model of education as well as adopt the philosophy that parents can and should be an acceptable and important part of their child's surgical experience with their involvement in the preoperative education plan. Refreezing will need the support of the change agents who initially believed that all preoperative education was within the job description of a CLS (Sare and Ogilvie, 2010).

CHAPTER 3: METHODOLOGY

Using a quasi-experimental design, a comparison was made between two groups. The control group (Group1) consisted of parents who received the current teaching and play by a CLS. The intervention group (Group 2) received the current teaching and play from a CLS and received a standardized preoperative education plan presented by the CRNA. This standardized teaching plan included information relevant to the anesthetic and postoperative expectations related to anesthesia. As this project was implemented, the CLS involved in teaching Group 1 and 2 was limited to two members. This was done to promote consistency in the teaching and play approach. The CRNA teaching the standardized plan to Group 2 was limited to the principal investigator (PI) to maintain a consistent teaching approach.

Subjects

Participants included the parents or guardians of 50 pediatric patients undergoing their first surgical experience. Both the control and intervention group had 25 participants. All parents of pediatric patients (age six months to 18 years) undergoing their first surgical experience in which urological, general surgery, and ENT procedures were planned were eligible for inclusion in the project. The surgical procedures were performed by five pediatric surgeons within a defined group. The surgeries consisted of hernia repairs, urology procedures, tonsillectomies and adenoidectomies. Surgical procedures were limited to promote consistency in preoperative teaching with regard to the postoperative expectations for the anesthetic and operative experience. Parents

eligible for the project spoke English as their primary language so anesthetic and surgical terms would not be lost to interpretation.

In addition to the utilization of surgical procedures as an inclusion criteria, we also limited participants to children who have been an American Society of Anesthesiology (ASA) classification I or II. The ASA has defined the classification of an ASA I to a healthy individual with little operative risk. A classification of II is assigned to patients with less than two comorbidities that are well controlled prior to the surgical experience and have a very small surgical risk (Menke, Klein, John & Junginger, 1993).

Setting

All surgeries took place at the Same Day Surgery Center in a large metropolitan city in the Southeastern United States. The Same Day Surgery Center site was selected since many of the children who visit this center are generally ASA classifications of I or II, and are generally a healthy population compared with the other operating sites on campus. In addition, many children scheduled for procedures at this site are experiencing the operating room environment for the first time and have not been exposed to previous anesthesia inductions or the operating room setting. The operative experience timeframe will be defined as preoperative, intraoperative and the postoperative period.

Pediatric surgical procedures were scheduled on week days in the surgical block time associated with each pediatric surgeon service line. Pediatric surgeries are routinely scheduled before 1:00 pm due to concerns with young children and fasting. In the study setting, parents received no consistent preoperative information from the hospital but may have received various forms of instruction from their pediatric surgeon's office. Fasting

guidelines were provided by the scheduling office and addressed the current Nothing by Mouth (NPO) guidelines supported by the ASA.

Tools/Measures

The Amsterdam Preoperative Anxiety and Information Scale (APAIS) is a six item questionnaire used to evaluate the pre and post teaching state of anxiety related to the anesthetic and surgical experience (see Appendix A). Four of the six questions (Q1, Q2, Q4 and Q5) examined on the scale represented fear of anesthesia and fear of the surgical procedure (Cronbach's alpha 0.86). Two of the items (Q3 and Q6) represented the need for information (Cronbach's alpha 0.72) (Moerman, van Dam, Muller, & Oosting, 1996). According to a 2007 German study evaluating the APAIS, the two scales in the APAIS which consist of anxiety and need-for-information could be replicated by a factor analysis and had high reliability (anxiety: Cronbach's Alpha = 0.92; need-for-information: Cronbach's Alpha = 0.86). The scales of the APAIS correlated highly with different standard questionnaires which measure anxiety (Berth, Petrowski, & Balck, 2007).

The APAIS is independent of sex, age or previous surgeries. Patients with a higher need-for-information show higher anxiety (r=0.59) prior to surgery (Boker, Brownell, & Donen, 2002). During its first trial the German version of the APAIS proved to be a reliable and valid instrument. It was further determined that the APAIS is a good screening instrument to assess preoperative anxiety and need-for-information in clinical practice (Berth et al., 2007). For this scholarly project, the APAIS was formatted and presented as a simple one page questionnaire and replicated in duplicate to compare pre and post education anxiety.

The numbering system for the APAIS tool was not matched in any way as to identify the patient. The APAIS tool utilized for this project was color coded to differentiate easily between Group 1 and Group 2. Data collection was started on January 8, 2015 and was continued until the sample size of 25 participants in each group was obtained. All demographic data or indicators were blinded during the Same Day Surgery registration process so as not to bias the project based on age or procedure.

Questions 1 through 6 of the APAIS examined the reduction in anxiety concerning preoperative education in general. Questions 1 through 3 examined the reduction in anxiety regarding the anesthetic, while questions 4 through 6 examined anxiety as related to the surgical procedure. Question 1 and question 4 were analyzed to determine if parents were more concerned about the anesthetic or surgical procedure prior to receiving preoperative education from either the CLS or CLS/CRNA educator.

Intervention and Data Collection

Fifty parents and their children that met all inclusion criteria were randomized into either the control group (Group 1) or intervention group (Group 2). Both groups received an intervention concerning preoperative teaching. Group 1 received the preoperative teaching and play by the CLS. Children and parents in this group were taught the anesthetic induction sequence using a soft face mask that was presented to the child to hold during the education. The child and parents were also presented laminated pictures taken to reflect the operating room environment. The insertion of a peripheral IV was discussed with the IV catheter portrayed as a soft straw that would “let your veins drink water” while asleep.

Group 2 received the same education as in Group 1 provided by the CLS and a standardized teaching plan provided by the CRNA (see Appendix B). Parents of both groups were followed only on the day of surgery. Data collection for Group 1 and Group 2 occurred during the month of January 2015 until the parents/guardians of 50 children were enrolled. Participants for potential inclusion in the project were identified by the principal investigator (PI) by reviewing the surgical schedule the day prior to the scheduled surgery. Only the parents of those children who met the age, ASA, surgical procedure and surgeon specified inclusion criteria were approached the day of surgery.

Parents and children were approached by the PI on the day of the surgical experience prior to an opportunity to receive preoperative education. At that time, parents who met inclusion criteria were given the option to participate in the project. Each parent who agreed to participate received a Study Participation Leaflet from the PI prior to teaching (see Appendix C). Parents who agreed to participate were then randomized into either Group 1 or Group 2 with every other parent/child group alternating between the groups for teaching. Patient identifiers were removed from all data and data was then coded with a unique identifier consistent with the patient case. All teaching in Group 2 consisted of the principal investigator in the Doctorate of Nursing Practice **s**cholarly project and the CLS to maintain consistency of educational content. The CLS was also kept consistent with two educators throughout the data collection period in Group 1 and Group 2.

Prior to teaching, the parents and children for both groups were placed in a private area within the Same Day Surgery Center pre surgical holding area. The PI provided the APAIS questionnaire to each group for completion prior to any teaching by either the

CLS or CLS/CRNA. The PI provided the APAIS tool again to both groups after teaching occurred but prior to separation of the parent and child for surgery.

The parents in Group 1 continued to receive therapeutic play from a CLS with no change in the current standard of care. The PI role in teaching for this group was only to observe the teaching method of role play. The PI was responsible for approaching parents with the APAIS tool before and after the CLS teaching session. The parents in Group 2 received detailed instruction by the CRNA with regard to an inhalation induction which is the anesthetic standard for most children. Parents of children with expected airway difficulties due to anatomy or surgical procedure were educated on the need and method necessary to obtain an IV in the holding area prior to surgery. The parents were also educated on the stages of anesthesia as well as possible adjunct pain modalities when appropriate for the surgery. The CLS continued to support teaching in this group by interacting with the child with the mask and stickers while the CRNA explained the anesthetic and surgical process to the parents. Preoperative anxiolytic medication Midazolam was discussed with parents of both groups and offered to children when appropriate. Child Life currently recommends premedication of all children without regard to prolonged emergence or emergence delirium. Midazolam has been implicated in the literature as a medication that is associated with emergence delirium in children (Cole, Murray, McAllister, & Hirshberg, 2002). Emergence delirium is a clinical phenomenon of unknown etiology where children often become inconsolable and difficult to manage (Vlajkovic & Sindjelic, 2007). Parents of Group 2 were instructed with regard to postoperative pain, activity and appetite expectations as related to the anesthetic and surgical procedure performed.

The American Society of Anesthesiologist website (www.asahr.org) supports and recommends strict nothing by mouth guidelines for children receiving any anesthetic. Per the recommendations of the ASA, NPO guidelines consist of no solid food six hours prior to surgery. For young children, breast milk is permitted four hours prior to surgery with formula prohibited within the six hour surgical window due to the increased fat content. The only recourse for parents consists of clear liquids not to include orange juice with pulp two hours prior to surgery (Cook-Sather & Litman, 2006).

All data for this project was maintained on a secured server at the PI's office in the hospital and was only accessible by the PI. Prior to the initiation of the project, the appropriate surgical groups were informed of the inclusion of their patients in this project. Consistency with preoperative education was achieved by education of the Child Life staff prior to the start of the project. The education of the Child Life Staff was under the direction of the PI in order to ensure consistency of education. This education consisted of the strategic goals of the organization, the current parental teaching program and why it exists as well as teaching points from Child Life Services.

Education for Group 2 was under the direction of the PI. Children and parents in Group 2 received the same instruction with regard to the anesthetic process as those patients who visit the preoperative anesthesia clinic prior to the operative experience. Children having their surgical procedure at the Same Day Surgery Center were excluded from a mandatory preoperative visit due to ASA classification of I or II.

CHAPTER 4: RESULTS

Fifty parents chose to participate in this study. Twenty-five were randomly assigned to Group 1 with the current pediatric preoperative teaching modality of therapeutic play. Twenty-five were randomly assigned to Group 2 for standardized teaching by a CRNA and therapeutic teaching with a CLS. All participants completed the study and there was no missing data.

The demographic characteristics of the children and parents in Group 1 and Group 2 were reported (see Table 1). The majority of the parents who participated in this project were Caucasian (64%). African Americans accounted for 26% of the study population with Latinos representing only 8 % of all parents. Children in the project were 62% male. Sixty percent of the surgical procedures were urological, while ENT procedures accounted for 26% of all surgeries. General surgery procedures accounted for a small portion of the surgical population (6%). Children in the age group of one to three years represented 44% of those presenting for a surgical procedure with infants less than one year of age accounting for 20% of the pediatric population. Children over the age of ten represented a very small portion of the surgical population (16%).

The participant scores on the 5 point Likert scale for each of the six questions contained on the APAIS tool were analyzed utilizing IBM SPSS software V 19.0. An alpha level of 0.05 was set for the statistical significance level of the study. The data from both groups was tested for normality with the Shapiro-Wilk Test. It was determined that normality did not exist ($p<0.0001$) for all APAIS questions. The Spearman

Correlation test was conducted to evaluate the relationship between all questions. We determined that all six questions on the APAIS tool were highly correlated ($p < 0.0001$).

A repeated measures ANOVA was conducted to compare the mean score differences between the groups (see Table 2). We used one way repeated measures ANOVA to assess the within subjects effect of time, and a two way repeated measures ANOVA to assess the between subjects interaction of time and group. The results are listed in the repeated measures ANOVA table (see Table 3).

We combined the mean participant scores for all questions (1-6) from the APAIS to analyze the difference between the pre and post teaching effects. The one way ANOVA analysis of pre and post intervention scores for both groups combined found a statistically significant reduction in the post intervention mean scores [$F(1,48) = 29.51$, $p = 0.000$]. However, when we examined the interaction of time and group for those same scores we did not find a statistically significant group effect [$F(1,48) = 2.495$, $p = 0.121$].

When we combined the pre and post-test mean scores of both groups for questions 1-3, which comprised the anesthetic related questions on the APAIS tool, we also found a statistically significant reduction in the post intervention means scores [$F(1,$ NA$) = 87.34$, $p = 0.000$]. However, when we compared the interaction of time and group we found no statistically significant differences between the groups post intervention score reduction [$F(1,48) = 0.640$, $p = 0.411$].

When we combined the pre and post-test mean scores of both groups for questions 4-6, which comprised the surgery related questions on the APAIS tool, we also found a statistically significant reduction in the post intervention scores [$F(1,$NA$) =$

76.494, $p = 0.000$]. When we evaluated the time and group interaction we found a statistically significant difference in group effect [$F(1,48) = 4.27$, $p = 0.044$].

We evaluated the anxiety level specific to the anesthetic by analysis of question 1 on the APAIS tool. When we combined the pre and post-test mean scores of both groups for this question we again found a significant reduction in the post intervention scores [$F(1,48) = 89.786$, $p = 0.000$]. However, when we evaluated the interaction of the time and group we did not find a significant post intervention score reduction between the two groups [$F(1,48) = 0.257$, $p = 0.615$]. When question 4, which comprised the anxiety related to the surgery concern on the APAIS tool, was analyzed we found a statistically significant reduction in post intervention scores [$F(1,48) = 61.44$, $p = 0.000$]. We also found a statistically significant reduction in anxiety when we examined the interaction of time and group [$F(1,48) = 5.843$, $p = 0.019$].

Discussion of Results

The majority of parents in the project were Caucasian (64%), with minority parents representing 26% of the population in the parent group (see Table 1). The demographic data was consistent with males representing 62% of the surgical population. The large portion of male children were potentially related to the urology service which also accounted for 60% of the surgical volume during data collection. The ENT service line represented only 26% of the patient population at the surgery center and may be attributed to the mandatory surgical scheduling of all children under the age of 2 years of age at the main operating room beginning in 2014. Forty-four percent of the pediatric surgical population were children one to three years of age. This patient population offered the greatest opportunity for therapeutic play with the CLS interactive standard for

teaching due to their ability to distract children with the anesthesia mask and colorful stickers. The relatively small number of children over 10 years of age may be reflective of the surgical procedures performed at the Same Day Surgery Center.

Many parents did not meet inclusion criteria for this project due to the lack of English as their first language. This creates a unique opportunity for development of a team who can address the needs of these families in their native language. The majority of parents in this category spoke Spanish as their first language. Currently, teaching by a CLS is offered to this group with the assistance of a Spanish speaking interpreter. Observation of teaching sessions identified interpretation barriers on the part of the interpreter with regard to anesthesia teaching, as many words could not readily be identified for interpretation.

Sixty-eight percent of the pediatric patients arrived with both parents on the day of surgery. The potential for another adult to distract the child may have influenced the findings of this study. A small inclusion group of surgeons and surgical procedures may not accurately reflect the different levels of parental anxiety that may be procedure specific and may be an opportunity for future research. The same day surgery setting may also be reflective of a lower level of parent anxiety when compared with the academic medical center that routinely utilizes the services of the main operating room.

Both interventions caused a statically significant reduction in overall parental anxiety. However, we were unable to detect a difference in effect between the groups. There may be numerous variables that contributed to this finding. While the APAIS has been validated, the scale may not be sensitive enough to measure subtle differences between the groups; a 10 or 100 point scale may offer a higher level of sensitivity. The

validity and reliability level of the tool may not be generalizable to the demographic makeup of the group studied and/or in the setting the study took place. Additionally, the CRNA teaching plan was not tested prior to the inclusion in this study.

When we compared the questions that pertained to anesthesia related anxiety and surgery related anxiety, we found that parental anxiety was significantly reduced in the questions related to the surgical procedure only. This finding may be related to the expertise of the CRNA as part of the surgical team. Moreover, the CRNA teaching plan may have more thoroughly addressed the parents' anxiety regarding the surgical procedure. When question 1 and 4 were examined, the findings suggested that parents were more anxious regarding the surgical procedure than the anesthetic. This may indicate that there may be a greater opportunity for anxiety reduction relating to the surgical procedure. Other factors that may have affected study results included the environment in which the study was conducted, the time of day the procedure was performed, the demographic mix of the study population and the administration of anxiolytic medications.

The examination of parental gender differences and the level of parental anxiety may be an opportunity for future research. Future research could also examine the parental anxiety related to the age of the child, birth order and number of siblings. Additionally, the effects of the child's anxiety state preoperatively and the relationship to the parent's anxiety may be an opportunity for future research. The examination of the teaching interval that would impart the greatest reduction in parental anxiety could also be an area for future study. And finally, the relationship between the reduction of parental anxiety and HCAHPS scores is an area that needs to be studied.

CHAPTER 5: PROJECT SIGNIFICANCE

Based on the results of this study, we believe that a standardized CRNA teaching plan should be included in preoperative education of parents prior to the operative experience. It appears that the addition of the CRNA to the preoperative teaching plan has the ability to offer an additional reduction in the level of anxiety of the parent in the area where their anxiety is the greatest; the surgical procedure. The combination of the skill set of a CLS and the CRNA offered the greatest reduction in the level of anxiety. The inclusion of a CRNA in the preoperative teaching arena may benefit many parents who now only receive basic teaching from a non-medically trained individual with regard to their child's entire perioperative experience.

The inclusion of a CRNA in the preoperative teaching team may be cost prohibitive due the loss of revenue generation while this education is delivered. In order to promote the inclusion of the CRNA in the preoperative education of parents, it will be necessary to justify the importance of a clinician into the teaching plan. Perhaps the best justification could be the improved communication process that is reflected in the anesthetic and surgical education of parents. As a justification for the loss of CRNA revenue while teaching, improved HCAHPS scores related to communication will be directly connected to reimbursement for hospitals. Additional measures to reduce cost could be to use alternative methods such as teaching pamphlets, videos, streaming video and virtual visits to deliver the standardized teaching plan.

Summary

The concept of family focused care throughout the pediatric hospital must be apparent in the pediatric surgical services arena as well as facility wide. Incorporating family centered care and improved communication will contribute to high patient satisfaction scores. Services that address communication and interaction with healthcare providers should help increase these scores. This can be accomplished by parental preoperative education as evidenced by the findings of this project. As healthcare consumers seek the opinions of other parents to identify quality healthcare institutions, positive HCAHPS scores can only help to solidify that finding.

The literature suggests there is a need for a standardized approach in preoperative teaching for parents (Chahal et al., 2009). The findings from this project support the addition of a CRNA clinician who delivers a standardized teaching plan to decrease parental anxiety and stress. The interaction of the CLS and the CRNA was a valuable partnership that allowed parents to ask very in-depth questions pertaining to the anesthetic as well as surgical procedure. The Child Life Specialists involved in this project were very knowledgeable in addressing child development issues that can become apparent when the child and caregiver are stressed. The addition of the CRNA to the teaching team afforded parents the ability to ask questions regarding expectations related to the anesthetic and surgical experience after the child is discharged. This unique opportunity does not routinely exist.

Recommendations

The operative experience can be an anxiety provoking time, as evidenced by the findings of this project and the current literature. As the healthcare environment

continues to focus on the experience of the patient and family, there is potential for many opportunities to improve communication and decrease the preoperative anxiety level of parents and children (Kain et al., 2004).

Preoperative education is a valuable asset that has been identified to help improve outcomes, patient satisfaction and quality within an institution. Preoperative education has been identified as an effective modality to help decrease parental stress, thereby indirectly decreasing child anxiety. As the current population of patients who utilize this large pediatric hospital for surgical needs continues to grow, so does the need for a multidisciplinary approach to the healthcare needs of parents and children. But where will these opportunities come from?

Educational opportunities currently exist on YouTube with regard to expectations for the anesthetic and surgical experience. Many of these videos are accurate in their portrayal of the anesthetic and surgical team, but just as many offer meaningless information that often can leave a parent and child disappointed and confused about the content that they are taught immediately prior to surgery. The use of video to deliver teaching by a CLS and CRNA in the operative environment would allow the parent and child to have an accurate expectation of the anesthetic and surgical experience. As the study hospital currently maintains a very active public website, this could easily be incorporated onto the surgical tab for viewing prior to arrival for surgery. In addition, a general help line to address parent concerns would set this hospital apart from competitors while promoting initiatives to drive positive HCAHPS scores regarding communication.

A process by which the outcomes of this new multidisciplinary teaching plan is evaluated will be necessary to maintain the change in the way parents are educated preoperatively. The continued use of the APAIS tool to evaluate outcomes on an ongoing basis should be instituted as a means to ensure the support of the change agents. An ongoing plan to report these outcomes to the administrators and stakeholders will be important to ensure the continued support of this change in practice (refreezing).

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TABLE 1: DEMOGRAPHICS

Table 1: Comparison of Group 1 and 2 for child and parent with clinical characteristics (n=50)

	Group 1 (n=25)	Group 2 (n=25)
Gender of children		
Male	17	14
Female	8	11
Parent present		
Mother	4	7
Father	1	0
Both	17	17
Same sex	3	1
Age of Child		
6 months-1 year	4	6
> 1 - 3 years	9	13
> 3 - 6 years	6	4
> 6 - 10 years	2	1
>10 - 13 years	2	1
> 13 - 18 years	2	0
Surgery service		
Urology	17	14
ENT	5	8
General	3	3
Ethnicity of Parents		
Caucasian	17	15
Latino	3	2
African American	5	8
Other	0	0

TABLE 2: SUMMARY OF MEANS

Table 2 : Summary of means from Group 1 and Group 2 before and after completion of APAIS

GROUP	Q 1-6 MEAN/SD	Q 1-3 MEAN/SD	Q4-6 MEAN/SD	Q1 MEAN/SD	Q4 MEAN/SD
Group 1 PRE	3.26/0.62	3.12/0.76	3.40/0.65	3.32/1.43	3.68/1.50
Group 1 POST	2.19/0.63	2.01/0.65	2.3/0.82	1.92/0.69	2.36/0.80
Group 2 PRE	3.0/1.03	2.96/1.08	3.04/1.04	3.16/1.43	3.08/1.50
Group 2 POST	1.89/0.60	1.85/0.62	1.93/0.66	1.84/0.69	1.84/0.80
Mean of Group 1 & 2 PRE	3.13/0.85	3.04/0.93	3.22/0.88	3.24/1.2	3.38/1.19
Mean of Group 1 & 2 POST	2.04/0.63	1.93/0.64	2.15/0.77	1.88/0.66	2.1/0.84

TABLE 3: MEASURES OF ANOVA

Table 3: Repeated Measures ANOVA

All questions Combined (1-6)	**Sum of squares**	**df**	**F**	***P* value**
Between subjects				
Group	1.960	1.0	2.495	0.121
Error	37.706	48.0		
Within subjects				
Time	29.510	1.0	92.100	0.000
Time × group	0.010	1.0	0.031	0.861
Error	15.386	48.0		
Questions 1-3 (Anesthesia)				
Between subjects				
Group	0.640	1.0	0.640	0.411
Error	64.400	48.0		
Within subjects				
Time	30.618	1.0	87.340	0.000
Time × group	0.000	1.0	0.000	0.999
Error	NA	NA	NA	NA
Questions 4-6 (Surgery)				
Between subjects				
Group	4.000	1.0	4.270	0.044
Error	44.960	48.0		
Within subjects				
Time	28.444	1.0	76.494	0.000
Time × group	0.040	1.0	0.108	0.744
Error	NA	NA	NA	NA
Question 1 (Anesthesia)				
Between subjects				
Group	0.360	1.0	0.257	0.615
Error	67.280	48.000		
Within subjects				
Time	46.240	1.000	89.786	0.000
Time × group	0.400	1.000	0.400	0.782
Error	24.720	48.000		
Question 4 (Surgery)				
Between subjects				
Group	7.840	1.000	5.843	0.019
Error	64.400	48.000		
Within subjects				
Time	40.960	1.000	61.440	0.000
Time × group	0.040	1.000	0.600	0.808
Error	32.000	48.000		

APPENDIX A: APAIS

1. I am worried about the anesthetic.
2. The anesthetic is on my mind continually.
3. I would like to know as much as possible about the anesthetic.
4. I am worried about the procedure.
5. The procedure is on my mind continually.
6. I would like to know as much as possible about the procedure.

The measure of agreement with these statements should be graded on a five-point Likert scale from 1 = not at all to 5 = extremely.

APPENDIX B: TEACHING PLAN

CRNA Preoperative Teaching Plan

Group 2 will receive detailed instruction by the CRNA with regard to an inhalation induction which is the anesthetic standard on most children. Parents of children with expected airway difficulties due to anatomy or surgical procedure will be educated on the need and method necessary to obtain an IV in the holding area prior to surgery. The expectation is that this will be a rare occurrence in this patient population due to ASA status. The parent will be educated to the stages of anesthesia as well as possible adjunct pain modalities when appropriate for the surgery. Preoperative medication administration will also be discussed with parents and offered to children when appropriate. At present, Child Life recommends premedication of all children without regard for prolonged emergence or emergence delirium. Parents of the intervention group will be instructed with regard to postoperative pain, activity and appetite expectations.

APPENDIX C: STUDY PARTICIPATION

Study Participation Information

You have been asked to participate in a research study that will examine preoperative education for the parents of pediatric patients at the One Day Surgery Center. You are being asked to participate in the study because you have a child that will be receiving an anesthetic. Your participation is voluntary and will consist of 2 short questionnaires that should take less than 5 five minutes to complete. Your agreement to participate in this study will in no way change the care you would have normally received. If you decide not to be in the study, it will not harm your relationship with your surgeon or Carolinas HealthCare System nor will your child's care be different. If you have questions, you may contact the primary investigator, Sherry Bernardo CRNA at 704-574-9805 or 704-355-8760.

The Institutional Review Board is a group of people who review the research to protect your rights. If you have questions about the conduct of this study you can call the Institutional Review Board of the Carolinas HealthCare System at (704) 355-3158.