Fall 12-1-2022

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DOI: https://doi.org/10.46409/sr.FSPQ6865

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This Manuscript Partially Fulfills the Requirements for the

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December 1, 2022

University of St. Augustine for Health Sciences
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Abstract

Practice Problem: The experience of surgery for pediatric patients and their families can be dependent on multiple factors including adequate preparation, English language proficiency and realistic expectations. Anxiety can contribute to a negative experience that may result in poor outcomes and a damaging reflection of the healthcare team and organization.

PICOT: The PICOT question that guided this project was: In preoperative pediatric patients and their families, how do therapeutic communication style and the provision of information about the perioperative experience affect their healthcare experience over eight weeks?

Evidence: A multi-modal approach to providing tailored preoperative education for the child and the parent can improve their perioperative experience. The practice of sitting with patient has demonstrated improved satisfaction scores by enhancing therapeutic communication, enabling active listening and improving trust between clinicians and patients.

Intervention: A bundle to improve pediatric perioperative patient's experience included the provision of a five minute, animated, educational video offered in English and Spanish and implementing sitting between clinicians and patients and families during all interactions.

Outcome: An analysis of the patient experience data reflected a decreased gap between the experiences of the English and Spanish language groups that was statistically significant. Clinical significance was demonstrated by qualitative data regarding enhanced communication from patients during the implementation period.

Conclusion: This project successfully addressed the health disparities that are prevalent for pediatric perioperative patients and families and closed the gap of experience between English and Spanish language preferred groups.

Improving the Perioperative Experience of Patients and Families in a Pediatric Setting

Undergoing a surgical procedure can be a traumatic experience for both the child and parent (Getahun et al., 2020). The foreign hospital environment and unfamiliar sensory experiences can evoke fear and anxiety for the entire family. Preoperative anxiety can have long-lasting consequences on treatment compliance, surgical outcomes and complications (Calabro et al., 2018). Interventions to improve anxiety comprise sharing information about the surgical experience beforehand and engaging in therapeutic communication between the patient and family throughout the perioperative experience; this communication can include proper body language and expression (Calabro et al., 2018). The purpose of this project is to evaluate the effect on patient and family satisfaction of sitting rather than standing during perioperative conversations between clinicians and patients/family as well as providing more information about the perioperative process and expectations prior to surgery.

Significance of the Practice Problem

Anxiety can exist for up to 75% of pediatric patients (Getahun et al., 2020) and 74% of parents (Ayenew et al., 2020). Negative experiences of the parents can consequently influence the child and vice versa (Santapuram et al., 2021). In children, pre-operative anxiety can manifest itself in behavioral expressions, such as aggressive physical actions, withdrawal or lack of cooperation with the health care team (Fronk & Billick, 2020). If negative behaviors are not addressed effectively and appropriately by the perioperative health care team, they can further increase the stress level of the parents and negatively affect the patients and family's experience of care. One instrument to measure patients' perception of care is the Hospital Consumer

Assessment of Healthcare Providers and Systems, or HCAHPS survey (Centers for Medicare and Medicaid Services [CMS], 2021). This instrument was developed to measure patient perceptions of care in 2006, and outcomes are tied to economic incentives (Nash et al., 2019). Negative patient experiences can have a significant financial impact on the organization since data are used to drive marketing campaigns and to benchmark against similar hospitals. Potential clients can access hospital review sites on the internet, such as Health Grades and U.S. News and World Report that can influence their decisions about where to receive care. Since a lack of effective surgical preparation can attribute to negative experiences by patients and families, providing information prior to surgery regarding the potential complications and postoperative recovery can improve the experience (Arulanandam et al., 2021).

Social determinants of health present multiple barriers to families, some who may face continued barriers within a perioperative setting from a lack of appropriate interpreter services and care from clinicians possessing minimal cultural humility (Perez et al., 2021). The family's ethnicity can affect their perception of care and anxiety (Stevenson et al., 2017), all which contribute to a potential for poor outcomes (Lobo Prabhu et al., 2018). In 2020, an academic tertiary pediatric hospital received data from the NRC Patient Experience survey that collated scores from all patients during the period from July 1, 2020- June 30, 2021. For questions around communication related to the nurse explaining things understandably, listening carefully and being comfortable to talk with, white patients reported higher scores for all questions compared to lower scores from all other ethnicities. All other ethnic groups included Alaskan and Native Americans, Asians, Blacks, Latinx, Native Hawaiian and Pacific Islanders. For questions about the MD/provider communication about listening and explaining, white patients reported favorable results compared to all other ethnic groups. These results reflect a more negative

patient experience by ethnic minorities compared to white patients. Moving towards health equity is a responsibility of healthcare leaders that is an identified conclusion of the report from the National Academy of Medicine on the future of nursing (National Academies of Sciences, Engineering and Medicine, 2021). Through addressing inequities and advocating for change, leaders can promote health equity.

PICOT Question

In preoperative pediatric patients and their families or caregivers, how do therapeutic communication style and the provision of information about the perioperative experience affect their healthcare experience over eight weeks?

Population

The population of interest is all pediatric patients undergoing surgery (P). Pediatrics is defined as all patients from one day old to 17 years old. Families or caregivers are those that accompany the patient in the hospital and are primary providers for their care.

Interventions

The intervention is a communication bundle (I) to enhance therapeutic communication with patients and families through the act of sitting during all verbal interactions in the preoperative setting. Sitting will occur on stools or chairs placed near the patient's bed. The second element of the bundle is to share information about perioperative expectations through an informational video that will be provided prior to surgery and available in English and Spanish.

Comparison

The comparator is the current practice (C) of communicating with the patient, which is standing at the foot of the bed while talking with the patient, family or caregiver. Standard preparation for pediatric surgery does not currently include an informational video. Pre-

intervention patient experience data from all perioperative patients will be used to compare against post-intervention data.

Outcome

Outcomes were measured using patient experience scores (O) specific to the pediatric perioperative area. Scores from the NRC Health survey were used (see Appendix A). All pediatric patients and families that were discharged from the pediatric recovery room after surgery received a survey in three modalities; mobile phone call, text message and email. They are sent in Spanish or English, depending on the preference that is documented in the electronic medical record. There were specific questions in the survey related to nurse and doctor communication that were used to measure outcomes. NRC Health survey questions (see Appendix A) that were analyzed were all related to communication and trust between clinicians and the patient. Survey results were separated by English or Spanish preferred language of the patients.

Timing

The intervention was implemented over a period of eight weeks (T) in the pediatric preoperative department. Four weeks after implementation, an evaluation of the intervention was conducted to determine improvements that were necessary. Implementation resumed again for another four weeks.

Evidence-Based Practice Framework & Change Theory

The Johns Hopkins Nursing Evidence-Based Practice (EBP) Model was used as the framework to implement and sustain this Doctor of Nursing Practice (DNP) scholarly project. This model incorporates the best available evidence including patient and practitioner experiential evidence to guide decision-making in a healthcare system (Dang et al., 2022).

External and internal influences were considered and can influence implementation and sustainability of EBP in this open model (Melnyk & Fineout-Overholt, 2019, p.413). The major components of this model are inquiry, practice and learning; with 19 steps comprising the practice question, evidence and translation (PET) process that is central to the model (Dang et al., 2022).

The Johns Hopkins EBP model provides a framework to guide critical thinking based on evidence findings as a result of formulating the PICOT question. Once the evidence was appraised and summarized, a recommendation was made based on a synthesis of the evidence. The final step of the PET process is to translate evidence into practice and evaluate and report outcomes. The PET process is iterative and allowed input from the interprofessional team to search and appraise the evidence. This model allowed for the inclusion of all levels of evidence to develop practice-specific recommendations and provided guidelines to create an action plan (Dang et al., 2022). This project involved a variety of interprofessional stakeholders in a very specialized practice area, and this model provided clear guidance and tools for conducting an EBP project to support change and sustainability.

Lewin's (1951) change theory was used as the framework for implementing change by using the three stages of change; unfreezing, change and refreezing. In the first step of unfreezing, stakeholders were convinced that a change was necessary through awareness of the problem that was present in the department. Data was presented to demonstrate that the current state of patient experiences was far below benchmark standards. Communication was the key in this step to create urgency and motivation to move towards an improved state. Once people were "unfrozen" and become mobile, they were more likely to accept change and became receptive to new behaviors. The final stage of refreezing was made through positive reinforcements of the

change and recognition of those that adapted the change. This theory was applied to the perioperative environment where the presence of both driving and restraining forces were present and recognizing that restraining forces were barriers that were overcome by the stronger force of change champions (Manchester et al., 2014).

Evidence Search Strategy

The CINAHL database was used to conduct a search for evidence using the following search terms: (a) pediatric surgery AND (b) preoperative preparation AND (c) anxiety. The source type was limited to academic journals published in the English language with a limitation of publication in the last 5 years. The titles and abstracts of the 65 articles were reviewed for relevance according to the following inclusion criteria: pediatric surgery, provider communication, pre-operative, post-operative, parental communication, anxiety, perioperative, nurse communication, parental anxiety, patient anxiety, pre-operative preparation, pre-operative education and experience. Exclusion criteria were studies related to chronic illnesses, intraoperative care, home care, surgical technique, pain, operating room communication. Studies that had an intervention performed by a family member or after discharge were excluded as well as exclusive pharmaceutical and virtual reality interventions. Descriptive, non-experimental articles were eliminated.

The PubMed database was also used to search for evidence using the terms (a) preoperative anxiety AND (b) pediatric surgery AND (c) preparation AND (d) surgery published in the English language in the last 5 years. The article type was limited to clinical trials, meta-analysis, randomized controlled trials, reviews and systematic reviews. Duplicates were removed and the titles and abstracts were reviewed using the same exclusion and inclusion criteria.

Evidence Search Results

Performing a search in the CINALH database using the search terms described yielded 65 articles. PubMed was the second database used and yielded 57 studies. Titles from both search results were compared and 11 duplicate articles were removed (see Figure 1). Titles and abstracts were reviewed and after the exclusion criteria was applied, 63 articles were eliminated. A review of the full length articles was attempted for the remaining 48 articles, but three articles were not available for viewing due to pre-publication status or restricted access. The remaining 45 articles were reviewed for exclusion criteria that included using only a pharmaceutical or virtual reality intervention. These were eliminated since implementation of those interventions will not be within the scope of this project. The articles that were descriptive, non-research articles were eliminated. For any interventions that were performed by the patient's family member or outside of the hospital were eliminated since that would not be possible to replicate. The final studies included as evidence were 13 research studies and five systematic reviews.

All studies were critically appraised using the Johns Hopkins Evidence-Based practice model for nursing and health care professionals (2022) tools; the Hierarchy of Evidence Guide and Research Evidence Appraisal Tool. Of the 14 research articles, nine were randomized control trials, which are considered level I evidence according to the Johns Hopkins hierarchy of evidence (2022) (see Appendix B). Four studies were quasi-experimental design which is level II evidence and there was one retrospective cohort study by Newell et al. (2020), which is level III evidence. Only the studies by Dwairej et al. (2020) and Chartrand et al. (2017) discussed a theoretical foundation in the article. After the level of evidence was determined, the quality of evidence was evaluated using the Johns Hopkins Research Appraisal tool for quantitative

appraisal. There were five studies that qualified as high quality (A), seven as good quality (B) and one as low quality (C).

The five systematic reviews were critiqued using the same Johns Hopkins tools and given a level of evidence and quality score (see Appendix C). The study by Rantala et al. (2020) was the only review that exclusively included randomized control trials in the review and therefore achieved a level I score. The review by Kim at al. (2019) was a level II and the remaining three reviews were a level III due to the type of studies they included in their review. Three of the reviews were given a quality grade A and two reviews given a quality grade B largely due to the small sample size and minimal discussion of the critique process.

Themes with Practice Recommendations

This section introduces themes identified through the literature appraisal and associated recommendations for practice. The themes were distracting the child, and educating the parent, the child or entire family unit. A practice recommendation was made based on findings from these themes.

Summary of Evidence

The appraisal of evidence revealed a variety of interventions aimed at reducing the anxiety of the child, the parent, or both. These interventions were intended to distract the child before surgery or to provide education to the child, parent, and/or family about the perioperative experience through a variety of modalities. In each of the 14 research studies, results from at least one of the outcome measurements supported the effectiveness of the intervention. Consistent tools were used to measure anxiety in the parent and child which allowed for clear comparisons of results between studies.

Distracting the Child

A systematic review by Kim et al. (2019) found consistent results in studies that used tablets and handheld devices to reduce anxiety in children. For the majority of these studies, the purpose of the device was to distract the child rather than to provide preoperative education. With younger children, complex concepts are difficult to comprehend and retain in relation to their upcoming surgery, and distraction seemed to be more effective at reducing anxiety. Four of six studies demonstrated that the active distractors were more effective in reducing pre-operative anxiety of children, which also improved the parent's satisfaction as a secondary outcome (Rantala et al., 2020). Matthyssens et al. (2020) evaluated the use of an education game for 5-11 year olds compared to an "empty" game with no educational content that was simply designed to distract the child. The results concluded that the educational game produced a greater reduction in anxiety for the children before surgery (Matthyssens et al., 2020).

Distraction is an appropriate technique for children under age six who are unable to process complex concepts about surgery. Anxiety can be decreased in children that are preoccupied with hand-held devices and their reaction to a strange environment and separation from parents may be mitigated. This strategy also helps to alleviate parental stress when it is necessary to separate from the child.

Educating the Parent

Ten out of the 13 studies described several methods designed to provide parents or caregivers with perioperative information prior to their child's surgery. Many were multimodal (Bartik et al., 2018; Chartrand et al., 2017; Coskunturk et al., 2018; Nair et al., 2021; Newell et al., 2020). The interventions included educational booklets, videos, hospital tours, and interactive games and sessions. Chartrand et al. (2016) examined the effects of an educational video on

parents. Though the results did not identify changes in anxiety, the researchers did report increases in parental knowledge and participation in the recovery room along with decreases in the children's postoperative pain. Gabriel et al. (2018) performed a systematic review to understand the psychosocial experiences of children and their parents. The authors suggested that parents' experience of anxiety and stress may be ameliorated by providing education about their child's surgery.

There are benefits to providing families with preoperative information that include a reduction of anxiety through increased knowledge of expectations as well as exposure to information prior to surgery. This can decrease the burden of teaching an overwhelming amount of information to the family which often falls on nursing staff. Receiving information multiple times through a variety of modalities may increase retention and understanding by the family as well as the child.

Educating the Child

There were a variety of strategies designed to prepare the child for surgery depending upon the patient's age. Jin et al. (2021) evaluated the effects of viewing an animated video three times with a cartoon character who described the surgical experience on children in China aged 3-6 scheduled for strabismus surgery. Emergence agitation was lower in the experimental group, and reductions in anxiety were seen in both the children and parents. Hatipoglu et al. (2018) found the greatest reduction in children's anxiety was achieved by audiovisual education compared with only audio and standard care. Children that are at least five years old may be able to comprehend more complex information about their surgery and benefited from basic information presented in an engaging audiovisual format.

Educating the Family Unit

Many studies included a component of interaction with the patient and family to provide reinforcement of content as well as an opportunity for families to absorb information about the perioperative experience (Aranha et al.,2018; Bartik & Toruner, 2018; Newell et al.,2020; Tural Buyuk & Bolisik, 2018). A literature review by Sullivan et al. (2020) found that a family-centered approach to reducing anxiety for the parent and child was the most useful.

Sitting with Patients

Several quality improvement studies that implemented the act of sitting demonstrated positive improvements in patient satisfaction as evidenced by higher patient experience survey scores (George et al., 2018; Lidgett,2016; Pittsenbargar et al., 2019). Lidgett (2016) and George et al. (2018) both improved scores in specific patient survey questions related to patient's perceptions of active listening and caring communication by the nurse. In a randomized control trial by Swayden et al. (2012), patients perceived a longer visit with surgeons that sat with them and had favorable comments about communication compared to physicians that stood.

Practice Recommendations

A multi-modal approach to providing tailored preoperative education for the child and the parent to improve their perioperative experience is supported by a high level of evidence. Distraction through electronic devices is appropriate for children aged 3-6, since they are not capable of understanding and retaining more complex concepts compared to older children. This practice is already commonplace and was reinforced to parents. Preoperative information about the surgical experience that is tailored to the needs of the parent and child and that includes an interactive component for the child to demonstrate learning would reduce the anxiety of children and their parents. Creating a five minute animated video that contains actual pictures of the

environment and medical devices was used to educate the family and patient about realistic expectations and reduce anxiety related to the unknown. Families and caregivers were instructed to view the video with the child to enable emotional support for the child if questions or concerns are raised. Viewing the video with the child also served to educate the parents and caregivers as a secondary benefit. The instructional design was targeted all pediatric patients aged seven and above and contained preoperative education that was applicable to all surgeries. The video design was suitable for teen patients as well; from a narrative voice that did not speak below their intellectual capacity so as to maintain engagement with this population. A short format helped with viewing compliance and allowed additional opportunities for viewing in the waiting area for those families that were not able to view it prior to arrival or who wished to view it again. The practice of sitting with patients and families was also recommended for perioperative staff. Sitting with patients has demonstrated improved satisfaction scores by enhancing therapeutic communication, enabling active listening and improving trust between clinicians and patients (George et al., 2018; Lidgett,2016; Pittsenbargar et al., 2019; Swayden et al., 2012) .

Setting, Stakeholders, and Systems Change

Setting

The setting for the DNP scholarly project was the pediatric perioperative department of a quaternary care academic medical center. The perioperative surgery department is home to all pediatric surgery specialties that included cardiovascular, neurosurgery, urology, orthopedics, plastics, general surgery, ophthalmology, ear, nose and throat surgery, fetal surgery and dentistry. The perioperative area of care included the surgical pre-op clinic, pre-op department, intra-op department and post-anesthesia recovery unit (PACU). Participants in the project were any staff that worked in these areas and the target population of the project were the patients and

families or caregivers that received care in this department. Patients may be admitted for ambulatory surgery with a plan to discharge home or plan for inpatient stay after surgery. The mission of the organization was caring, healing, teaching and discovering. The vision was to be the best provider of health care services, the best place to work and the best environment for teaching and research. The mission and vision of the organization aligned with the goals of the DNP scholarly project.

Stakeholders

The children's hospital falls under the larger organizational structure of the health system as one of two hospitals that provide pediatric services. Under the president of the health system was the president of the children's hospitals and a chief nursing officer who oversaw both hospitals. Other stakeholders included the children's hospital president, chief operating officer, chief nurse executive, chief nursing officers, departments of quality and safety, patient experience and interpreting services. Within the pediatric perioperative department, there was a leadership triad that consists of the medical director, chief anesthesiologist and chief surgeon. An executive director oversaw both perioperative departments at both hospitals. There were two assistant unit directors and approximately 50 full and part time staff that consist of nurses, patient care assistants, unit secretaries and technologists. Clinicians in the pediatric perioperative department were anesthesiologists, nurse anesthetists, surgeons, nurse practitioners and physician assistants. Ancillary departments included child life services, environmental services and equipment specialists. The patient and family/caregiver were the center of care and represented the most important stakeholders of the project. The Patient-Family Advisory Council and Youth Advisory Council were consulted to ensure that this project met the needs of the patients and

allowed the opportunity for active engagement of these councils throughout all processes of the project.

This project was identified as an organizational need to address the health inequities of our patients and was supported by the chief nurse executive and pediatric perioperative executive director. The children's hospital had a diversity, equity, inclusion and anti-racism (DEIAR) council that provided data to reflect the gaps in all patient experiences in the past year between white patients and those from minority ethnic groups. Support for improving existing resources to better prepare the pediatric patients and families for surgery was expressed by multiple stakeholders and aided in the sustainability of this project. Utilization of tools to enhance the perioperative experience of patients needed support by stakeholders with a plan to integrate tools and resources into existing workflows. A SWOT analysis was created to identify strengths and weakness to aid in creating a project plan (see Figure 2). One of the opportunities of the organization was the nationally recognized reputation of the surgeons and nurses which drive patients to seek care at the hospital, but this could also be viewed as a weakness when expectations from families were not met by the organization.

System Change

This project created a micro level change for the individual patient and family by impacting their personal experience throughout the perioperative department. Health experience survey response answers reflected their experiences accordingly. This project also created a meso level change by creating new resources and workflows for all patients that flow through the perioperative department. This was reflected in data trends over time from the NRC Health survey responses. Since patient outcomes can be tied to satisfaction, post-operative patient outcomes could also be affected (Lobo Prabhu et al., 2018).

Implementation Plan with Timeline and Budget

The implementation plan was designed to meet objectives that improved the patients' experience. The pediatric prepare clinic offered access to a five minute preoperative video preparation video to all pediatric surgical families with a goal of 50% of all patients receiving preoperative education by September 1, 2022. By providing preoperative patient education to the patient and family in both English and Spanish, the objective was to achieve Spanish speaking patients NRC Health satisfaction and communication scores within an 8% range of English speaking patients. By July 23, 2022, an aim of at least 50% of the clinicians will sit during their interactions with pediatric patients and families or caregivers during their interactions in the pre-operative holding area. By September 1, 2022, the results from the specific NRC Health survey questions relating to satisfaction and communication from surgical pediatric patients discharged from the PACU will achieve a target goal of improvement by 10% as the result of enhanced perioperative preoperative communication by perioperative clinicians. The project interventions do not pose any risk to patients, families or clinicians.

Change Theory and Translation

Using Lewin's Change Theory (Lewin, 2012) as a framework for implementation, the operational steps were separated into three parts as identified on the Gantt chart (see Figure 3). The process is akin to state changes of water as it transforms from unfreezing, to change and finally refreezing. Implementing an action plan is a component of the translation step in Johns Hopkins PET Process Guide (Dang et al., 2022), the final step of an EBP project plan.

Unfreezing

The first step was to "unfreeze" old practices and beliefs and share the clinical problem with stakeholders to ensure agreement that change is necessary and to strategize a plan to

implement the change. The project manager was responsible for coordinating strategic planning meetings, and provide ongoing communication to all stakeholders about progress, barriers and successes. Facilitation the involvement of both the Patient-Family Advisory Council and Youth Advisory Council was instrumental in ensuring that the patient perspective was included in all aspects of both interventions. Champions from each profession were recruited to increase inter-professional engagement and help to communicate updates to their respective teams. The act of sitting while interacting with patients proved difficult because of physical barriers in the environment and the pressure of time to complete multiple tasks in a short amount of time. Input from all clinician champions during this "test" phase was imperative in order to identify strategies to increase chances for an easier change in practice and plans to address potential barriers. Conducting education and training using the teach-back method (Agency for Healthcare Research and Quality, 2021) was used to reinforce learning from clinicians. Feedback on sitting compliance in the perioperative areas was provided to all clinicians to enable real time coaching and tracking over time. During this pilot phase, the testing and development of the five minute preoperative video was finalized and tested in collaboration with the child life specialist, anesthesia team and nurse practitioners from the preoperative clinic. The film storyboard (see Figure 4) was shared as a framework to guide the script development for the video and to ensure the five minute time limit was met. Ensuring accessibility with closed captioning and translation to Spanish was completed during this time as well with the help of interpreting services.

Change

The second phase of the process was the change process, when implementation of the interventions took place. Stools were in place to encourage clinicians to sit as well as visual posters (see Figure 5) placed in the preoperative areas for reminders. Communication was shared

weekly via email reminders, verbal reminders during morning huddles and posters placed throughout the department. An audit tool (see Figure 6) was used to observe compliance with the intervention and used to report progress to the department on a weekly basis. The preoperative educational video was shared to all patients scheduled for surgery by the prepare clinic staff. For patients that were not able to view the video prior to their surgery date, the video was accessible in the pediatric surgical waiting area through posters with QR codes. Admitting staff included information about the video as they checked-in patients prior to their scheduled surgery. Four weeks after initial implementation of both interventions, the project manager evaluated the data of sitting observations and obtained feedback from all stakeholders regarding any barriers to sitting or difficulty accessing videos by patients. Results of current progress and any updates were communicated to all stakeholders during the entire duration of project implementation.

Refreezing

In the final refreezing phase, the goal was for changes in practice to be solidified. Data from the sitting observations tool were analyzed as well as data from the NRC Health survey to determine differences in patient experiences between pre and post intervention. Feedback from clinicians, patients and families were valuable to use to sustain and modify any aspects of the project.

Budget and Resources

Securing resources and creating a budget is a component of translating evidence to practice, according to the Johns Hopkins PET Process (Dang et al., 2022). A project budget was created (see Figure 7) with an itemized list of projected expenses. Purchasing an adequate number of stools for clinicians was a direct cost that was absorbed as a shared resource by the perianesthesia manager for another quality improvement project. The DNP student created the

video based on expertise as an instructional designer. There were no identified revenue sources, but an indirect financial benefit resulted from positive patient experiences. Sharing a positive experience can influence potential clients through recommendations and improve ratings on public accessed hospital data sources such as Healthgrades (2022) or Yelp (2022).

Results

The results of each intervention were measured using different tools. The patient education video intervention was measured by the number of views. The figures for number of views were collected and analyzed separately for the Spanish and English versions. The action of sitting was measured using an observation audit tool. Overall changes in patient experience were measured using the organization's survey database, NRC Health and were analyzed using Intellectus Statistics, a data analysis program. Patient-survey participation was optional and anonymous; therefore, the results reflected a convenience sampling of patients who may or may not have received either intervention.

Patient Experience

The intervention phase of the project was conducted over eight weeks, and the patient experience outcomes were measured by comparing pre and post intervention data. These data were extracted by the DNP student from NRC Health, which collates and reports real time data and provides comparative national benchmark data for each measurement. Specific demographic information about the patient was not collected during data extraction, and so no violations of HIPAA occurred.

Quantitative Data

Compared to the number of surgical cases, survey responses were consistent for the both groups in the pre and post interventions periods. Percentage of surveys submitted for the English

group averaged 6.5% and 17.5% for the Spanish group (see Table 1). For the Spanish group, the result of the two-tailed paired samples *t*-test was statistically significant based upon an alpha value of .05, $t(10) = 4.18$, $p = .002$, indicating that the mean patient experience scores were higher in the pre-intervention period (see Table 2). For the English group, the result of the two-tailed paired samples *t*-test was not substantial based upon an alpha value of .05, $t(10) = 1.54$, $p = .154$ (see Table 2), indicating no statistically significant changes between pre and post intervention phases.

When comparing the pre and post interventions results between the English and Spanish groups, there was no significant difference in the post-intervention period compared to a significant difference (p=.002) in the pre-intervention period (see Table 2). The results of this comparison indicated a more similar experience between groups after the implementation of interventions with a reduction of the difference in the two means. This outcome achieved the benchmark of reducing the gap to an 8% difference between the means of the two groups.

Other qualitative data obtained consisted of monthly results for each NRC survey question over the last year (see Figures 7-17). This data illustrated long term trends for both groups and showed changes in responses to specific questions after implementation: specifically, the "would recommend" question, which is weighed heavier than other questions and termed the "Net Promoter Score." For this specific question, the trend line for the Spanish group was on an upward slope (see Figure 7).

Qualitative Data

Patient comments were captured from NRC Health during each phase of the project (see Table 3). In both the pre and post intervention periods, 50% of the total respondents submitted comments. Waiting time was a common negative comment in all phases. Positive themes in the

pre-intervention phase included appreciation, staff providing emotional support, and staff being caring and friendly. Similar themes of gratitude and emotional support were expressed in the post-intervention period. Additional positive themes submitted during the intervention period included spending time, answering questions, validating feelings, being respectful, and providing comfort, empathy and safety. These comments reflected specific patient experiences that may have been directly influenced by the intervention of enhanced therapeutic communication through intentional sitting by clinicians. Since the patient comments were anonymous, there was no way to determine which patients experienced clinicians sitting with them, communicated in their preferred language, or watched the education video.

Sitting

To measure the action of sitting by clinicians with patients, the DNP student trained a college student volunteer to make observations over six weeks during a two hour period at the start of the day in the pre-operative area. An electronic data collection tool was used to include the type of clinician and a sitting score (see Figure 6). Sitting qualified as positive if it was done for greater than 50% of the total time with the patient, and at least one member of the same team sat during the patient interaction.

There were 296 total observations made that documented pre-op nurses and anesthesia providers sitting with their patients at the highest rates (see Table 4). For all clinicians, the percentage of sitting during patient interactions was 38%. These were random observations made during the busiest times of clinician interactions in the pre-op department; no patient information was included in the data collection.

Perioperative Education Videos

The number of videos views was captured by the web platform hosting the videos and did not include any specific information about the viewers. During the intervention period, there were 166 views of the English video and 43 views of the Spanish video. Links to the videos were sent to all scheduled surgery patients from the clinics via email, and the QR codes were posted on flyers in the surgical waiting area.

IRB Approval

Prior to implementation, the required approval from the EBP Project Review Council (EPRC) was obtained from the University of Saint Augustine for Health Sciences. Executive leadership approval from the organization was obtained prior to implementation; no additional IRB approvals were deemed necessary.

Results Summary

The effect of the project interventions were analyzed from patient experience data. A statistically significant difference between the pre and post-intervention group responses reflected a decreased gap between the experiences of the English and Spanish language groups. Many post-intervention results in both groups outperformed national benchmark scores (see Table 1).

Impact

The project had several positive impacts on both clinician practice and patient experience within the pediatric perioperative environment that indicated clinical significance. Healthcare quality and access is identified as a social determinant of health, and this project was related to one of the objectives of Health People 2030: to “increase the proportion of limited English proficient (LEP) adults who report that their doctors or other health providers always explained

things in a way that was easy to understand" (U.S. Department of Health and Human Services, n.d., "Healthcare Access and Quality"). Patient comments from survey data during the implementation period included words that aligned with enhanced communication, such as "respect," empathy, caring and kindness (see Table 3).

Survey results from LEP patients continued to demonstrate disparities in their healthcare experiences compared to English speaking patients, but a greater alignment of experiences between the two groups was reflected in the post-intervention period data results (see Table 2). These outcomes may have been influenced by the project interventions of accessible Spanish language surgery education and improved quality of clinician communication that was inclusive of language and cultural considerations. The project increased awareness of language disparities to clinicians in the pediatric perioperative department. Efforts to improve interpreting services for LEP patients were initiated through their advocacy and interprofessional collaboration.

Language Access

Healthcare organizations that serve patients with limited English proficiency have a responsibility to provide information that is accessible and that can be comprehended (The Joint Commission, 2010). When information is communicated by clinicians with cultural humility, it is more likely to be received effectively by patients; who then feel more comfortable to share information that helps clinicians better understand their symptoms (Tervalon & Murray-Garcia, 1998).

While clinicians were supportive of sitting with patients, providing high quality interpreting services for families proved challenging. The physical environment of the clinical space limited the number of people that were able to sit together. Further, it was difficult for an interpreting device to be placed in proximity to the entire team to ensure ideal audio quality. This

limitation was shared by multiple stakeholders, and a workgroup was identified to improve the quality of current interpreting services.

Surgery scheduling also created interpretation challenges. It was difficult to arrange an in-person interpreter due to the limitations of the interpreting team as well as the constant variability of the surgery schedule. The interprofessional workgroup identified best practices that were shared with the entire perioperative department.

Sustainability

Reducing health disparities for patients is a driver of research and quality improvement initiatives in the healthcare organization, and several clinicians expressed interest in supporting and continuing the goals of the project. A group of surgery students from the organization's medical school plan to address the disparity of healthcare experiences of LEP patients compared to English speaking patients and will conduct a quality improvement project in the upcoming year on this topic.

An operating room nurse who is participating in an evidence-based practice (EBP) fellowship is conducting a project to continue to improve therapeutic communication through sitting. The nurse's project will also address efficiency through the utilization of standard scripting and a timed checklist. This EBP project may further improve sitting compliance scores towards achievement of clinicians sitting with patients during at least 50% of their interactions. The patient education videos continue to be disseminated by surgery clinics. However, plans to host them on the hospital website will allow for increased accessibility and an improved ability to utilize and cite them as resources. The videos have been shared with the marketing and communication team to ensure they meet accessibility standards and then will be published on the hospital's public facing, pediatric surgery website.

Any improvements that result from these initiatives will be reflected in patient experience NRC Health survey responses. These data are continuously monitored by department leaders and shared with staff as a reflection of current practices. Any patient experience trends can be identified and be used to strategize and prompt and necessary action plans.

Limitations

Due to the eight week duration of the project, data collection was limited and the data evaluation period was relatively short. During the implementation period, COVID-19 infections were impacting staffing, and an increased number of travel nurses were present in the department. Burnout of regular staff and inconsistent staff may have influenced compliance and staff engagement. Sitting observations and auditing were conducted by a college student without the provision of feedback or coaching, which could have influenced clinician compliance and outcomes. Patients were not surveyed about viewing the patient education videos, and so their direct impact could not be determined. Since responses from the patient experience survey database were anonymous, the correlation of changes in patient experience survey responses to the viewing of patient education videos and sitting intervention was secondary and assumed.

Dissemination Plan

Initial dissemination started with presentation of the project outcomes to all pediatric surgery department stakeholders in department meetings. To further share the project to those outside of the pediatric perioperative environment, an abstract was submitted to the healthcare organization's annual clinical inquiry conference for a podium presentation. Another abstract that included this project was submitted by a pediatric surgeon to the 2023 American Society of Pediatric Otolaryngology Annual Meeting for a panel presentation to discuss strategies to mitigate health disparities in this population.

The project is published in the University of Saint Augustine's repository of scholarly work; SOAR@USA. This is an open access database that allows the manuscript to be identified, cited and referenced through the subject category and key terms. Additional presentations include the AAA Sigma DNP Scholarly Project Symposium and a poster presentation with an oral accompaniment for University of Saint Augustine for Health Sciences students and faculty.

Conclusion

Improving the experiences of patients and families as they undergo surgery can have a positive impact on surgical outcomes of patients and also reflect high quality care provided by the healthcare team. Addressing health inequities is a priority for all healthcare leaders and provision of care and patient education must be inclusive of all patient populations that are served. This project addressed language barriers that are faced by native Spanish speakers by providing preoperative education in Spanish in addition to English. The goal of providing this education was to close the gap of patient experiences between the two demographic groups.

The aim of reducing anxiety by patients and families was achieved by providing a visually appealing, short video that highlighted the actual perioperative environment and provided expectations of the experience. Patient experience can also be enhanced through therapeutic communication with clinicians during this stressful period, and intentional sitting during interactions with patients and families can build trust and reduce anxiety (George et al., 2018). The impact of both of these interventions was determined by analyzing results from patient experience survey data which showed a decreased gap between English and Spanish preferred language patient's responses. This outcome reflects an alignment of experiences between the two groups and progress towards the goal of reducing health disparities for LEP patients.

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Table 1

NRC Health Survey Results

	English–Language Preferred Respondents		Spanish- Language Preferred Respondents		Benchmark at Post-Intervention timeframe [b]
	Pre-Intervention[a]	Post-Intervention[b]	Pre-Intervention[a]	Post-Intervention[b]	
Total number of surgical cases	179	225	22	23	
Survey Responses (%)	10 (6%)	15 (7%)	4 (18%)	4 (17%)	
Question					
How likely would you be to recommend this facility to your family and friends?	100	82.4	100	100	75.7
Did you have enough input or say in your care?	80	68.8	75	75	75.4
Did you feel that the staff cared about your child as a person?	80	87.5	100	75	67.3
Did the care providers explain things in a way you could understand?	90	68.8	100	75	77.6
Did the care providers listen carefully to you?	70	81.3	100	75	81.8
Did you trust the care providers with your child's care?	80	81	100	100	79.1
Did your child's doctor or anyone from the facility explain the process of anesthesia, including possible side effects, in a way that was easy to understand?	90	81.3	100	75	82.2
Did nurses treat you with courtesy and respect?	90	87.5	100	75	81.9
Did nurses listen carefully to you?	90	68.7	100	75	79
Did nurses explain things in a way you could understand?	90	86.7	100	75	78.1
Did you have confidence and trust in the nurses treating your child?	80	86.7	100	100	77.9
Were you comfortable talking with nurses about your child's worries or concerns?	80	87.5	100	75	77.5

Note: Question responses are expressed in median percentages with a range from 0-100%.

[a] The pre-intervention period was 6/25/22- 7/11/22

[b] The post-intervention period was 9/3/22- 9/19/22

Table 2

Two-Tailed Paired Samples t-Test for the Difference Between Different Groups

	M	*SD*	*t*	*p*	*d*
Pre-Intervention- English	85.45	8.20	1.54	.154	0.47
Post-Intervention- English	80.06	7.69			
Pre-Intervention- Spanish	97.73	7.54	4.18	.002*	1.26
Post-Intervention- Spanish	81.82	11.68			
Pre-Intervention English & Spanish			4.14	.002**	1.25
Post-Intervention English & Spanish			0.48	.640***	0.15

Note. N = 11. Degrees of Freedom for the *t*-statistic = 10. *d* represents Cohen's *d.* *This is indicative of significant higher mean scores during the pre-intervention phase. ** A significant difference was noted between pre-intervention experiences of English and Spanish groups which decreased in the post-intervention period ***.

Table 3

NRC Health Qualitative Data Summary

	Pre-Intervention(6/25/22-7/10/22)	**Intervention Period (7/11/22-9/2/22)**	**Post-Intervention (9/3/22-9/16/22)**
Total Respondents	14	115	18
Total Comments	7 (50%)	31 (27%)	9 (50%)
Average Rating	9.86	9.74	8.11
Positive themes	• Appreciation • Emotional support • Gratitude with inclusion of specific team members • Caring • Friendly	• Gratitude to surgeon, staff with inclusion of specific team members • Special needs patient • Spent time • Kindness • Answered questions • Shared decision making • Validated feelings • Nurses patient and communicated clearly • Respectful • Felt confident after discharge • Provided comfort • Caring • Felt safe • Understanding, emotional support • Empathy, Respect, Dignity	• Gratitude • Gratitude to surgeon, staff with inclusion of specific team members • Special needs • Emotional Support
Negative themes	• Waiting • Long discharge process	• Waiting • Autistic needs • Parking • Difficulty navigating system • Poor communication about waiting time	• Lack of care coordination • Waiting for RX • Disrespectful treatment • Did not respect wishes of parents

Table 4

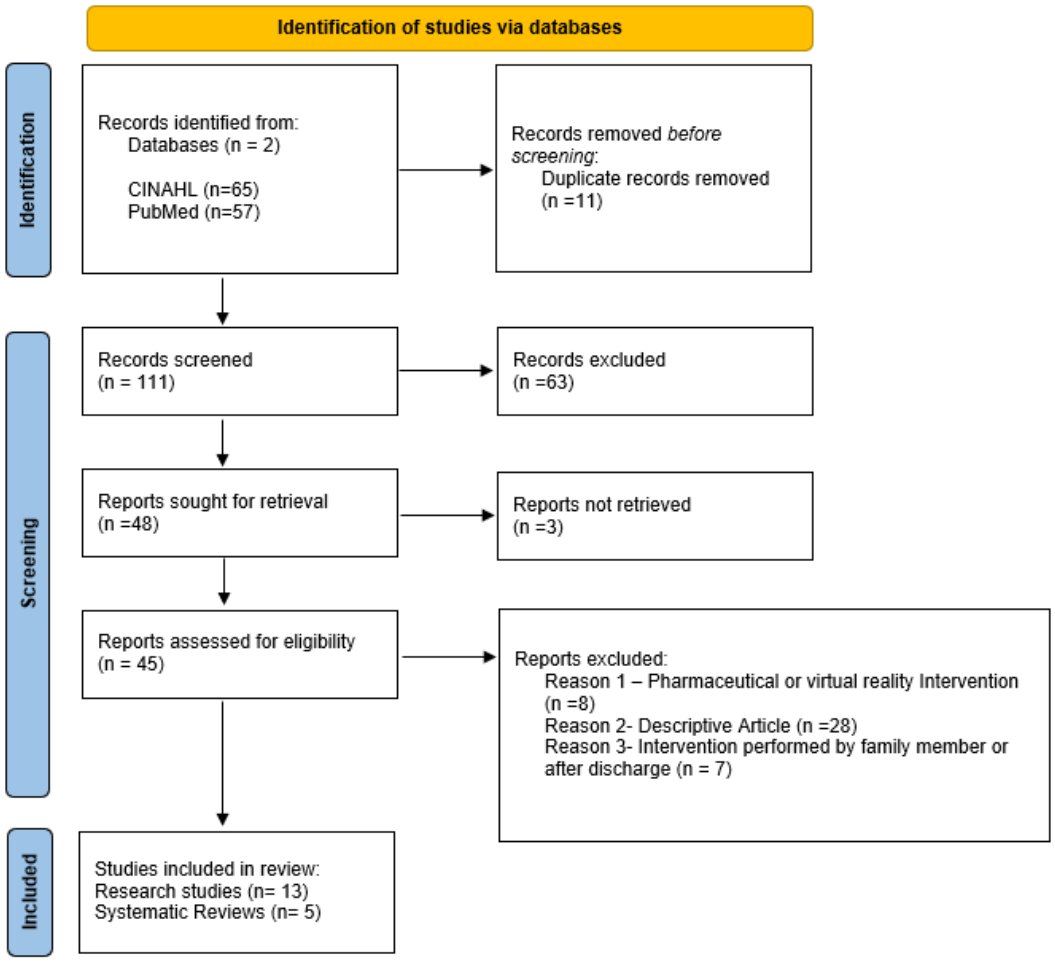
Sitting Audit Tool Results

Clinician	Sat > 50% of Interaction		Did not sit		Total Observations	
	n	%	*n*	%	*n*	%
Anesthesia Team	36	38%	58	62%	94	32%
Interpreter	1	100%	0	0	1	0.03%
OR RN	6	32%	13	68%	19	6%
Other	0	0	1	100%	1	0.03%
Perianesthesia RN	48	44%	61	56%	109	37%
Surgery Team	20	28%	52	72%	72	24%
Total	**111**	**38%**	**185**	**62%**	**296**	**100%**

Note. Observations made between 7/13/22- 8/25/22.

Figure 1

Flow Diagram of Search for Evidence



Note. Prisma flow chart diagram. From "The PRISMA 2020 Statement: An Updated Guideline For Reporting Systematic Reviews," by M. J. Page, J. E. McKenzie, P. M. Bossuyt, I. Boutron, T. C. Hoffman, C. D. Mulrow, L. Shamseer, J. M. Tetzalaff, E. A. Akl, S. E. Brennan, S. E. Chou, J. Glanville, J. M. Grimshaw, A. Hróbjartsson, M. M. Lalu, T. Li, E. W. Loder, E. Mayo-Wilson, S. McDonald…D. Moher. 2021, PLoS Med, 18(3):e1003583, 1-15. https://doi.org/10.1371/journal.pmed.1003583.

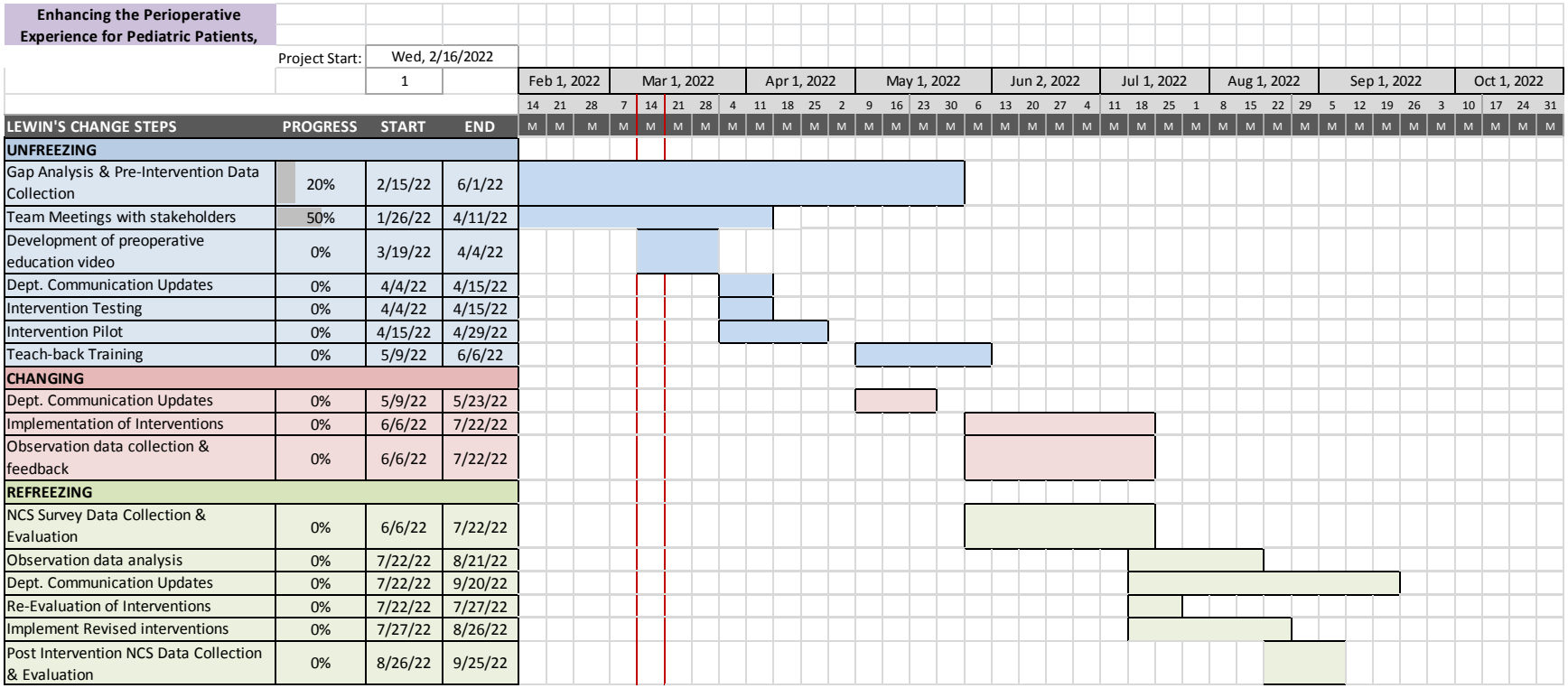
Figure 2

SWOT Analysis

Strengths	**Opportunities**
• Availability to collaborate with interpreting services • Pre-op telehealth visits with NPs available • Pre-op clinic motivated to provide better resources for patients	• Nationally ranked pediatric surgery program • Favorable reputation • Provide specialty care • Motivated patients • Magnet designated organization
Weaknesses	**Threats**
• Multiple surgical specialties scheduling surgeries in a complex system • Inconsistent patient contact • Child Life Services limitations; unable to see all patients preoperatively • Patients and families are only provided pre-op education from NP and from external video service • Patient information and education provided in limited languages	• Limitations to in-person interactions due COVID-19 • Similar pediatric hospital located 34 miles away

Figure 3

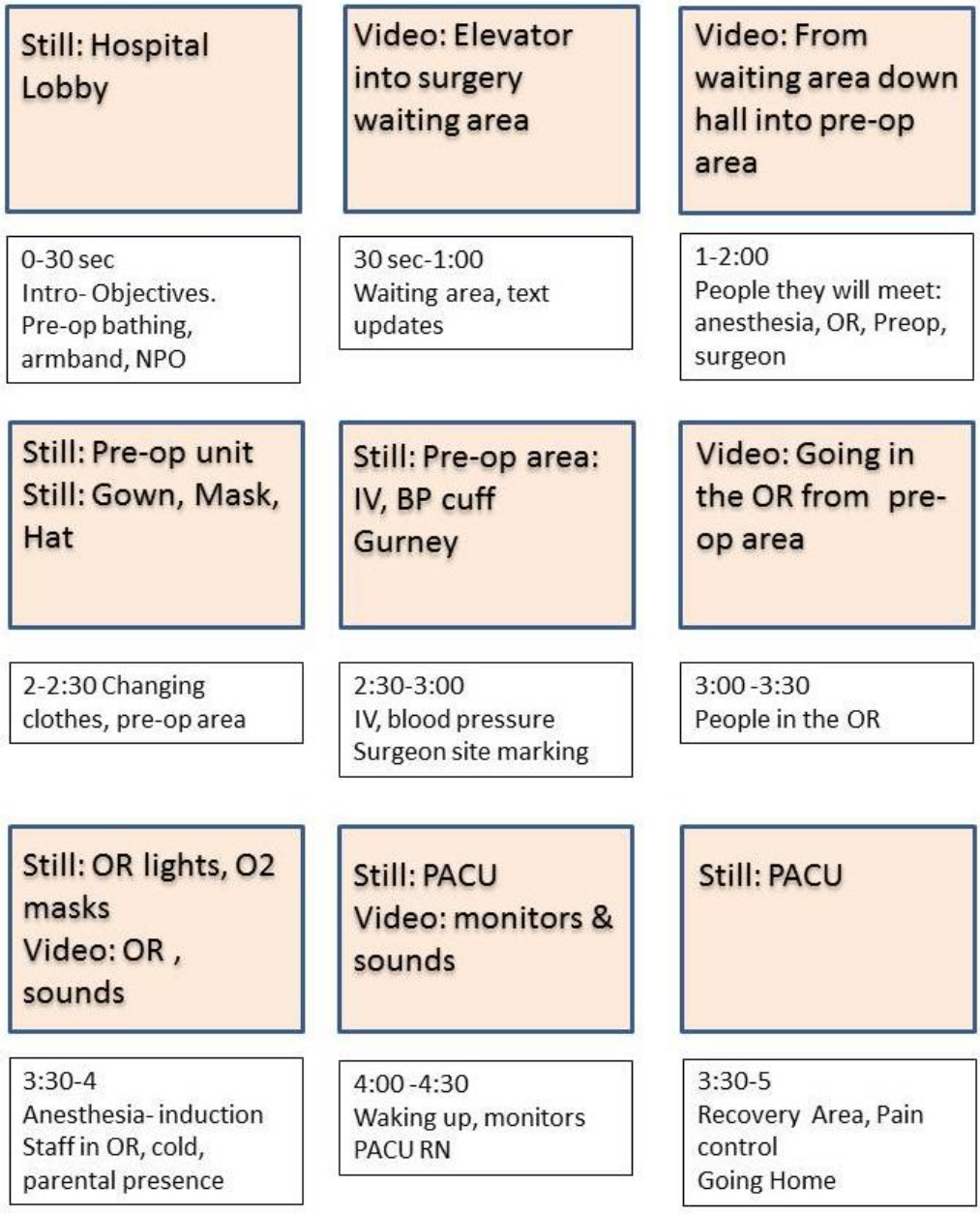
Gantt Chart



Note. Action items are categorized under each of Lewin's change steps. Communication about updates occurs during each phase.

Figure 4

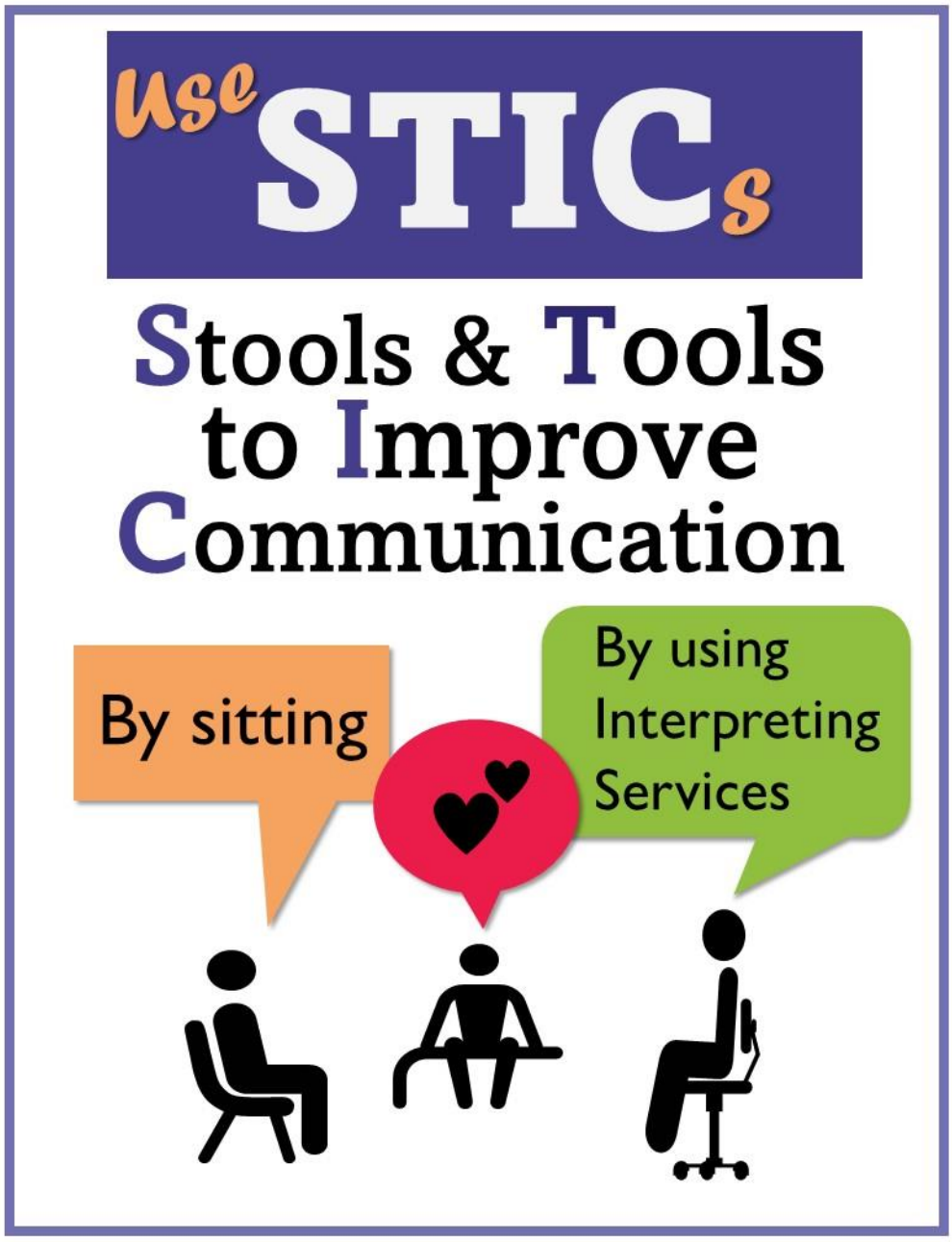
Preoperative Video Storyboard



Note. The storyboard outlines each scene of the video with a description of the still photo or video that will be displayed. The times indicate how long each scene will run with a description of content that will be covered in each scene.

Figure 5

Project Flyer



Note. Flyer created using Microsoft PowerPoint® and was displayed throughout the department as a visual cue.

Figure 6

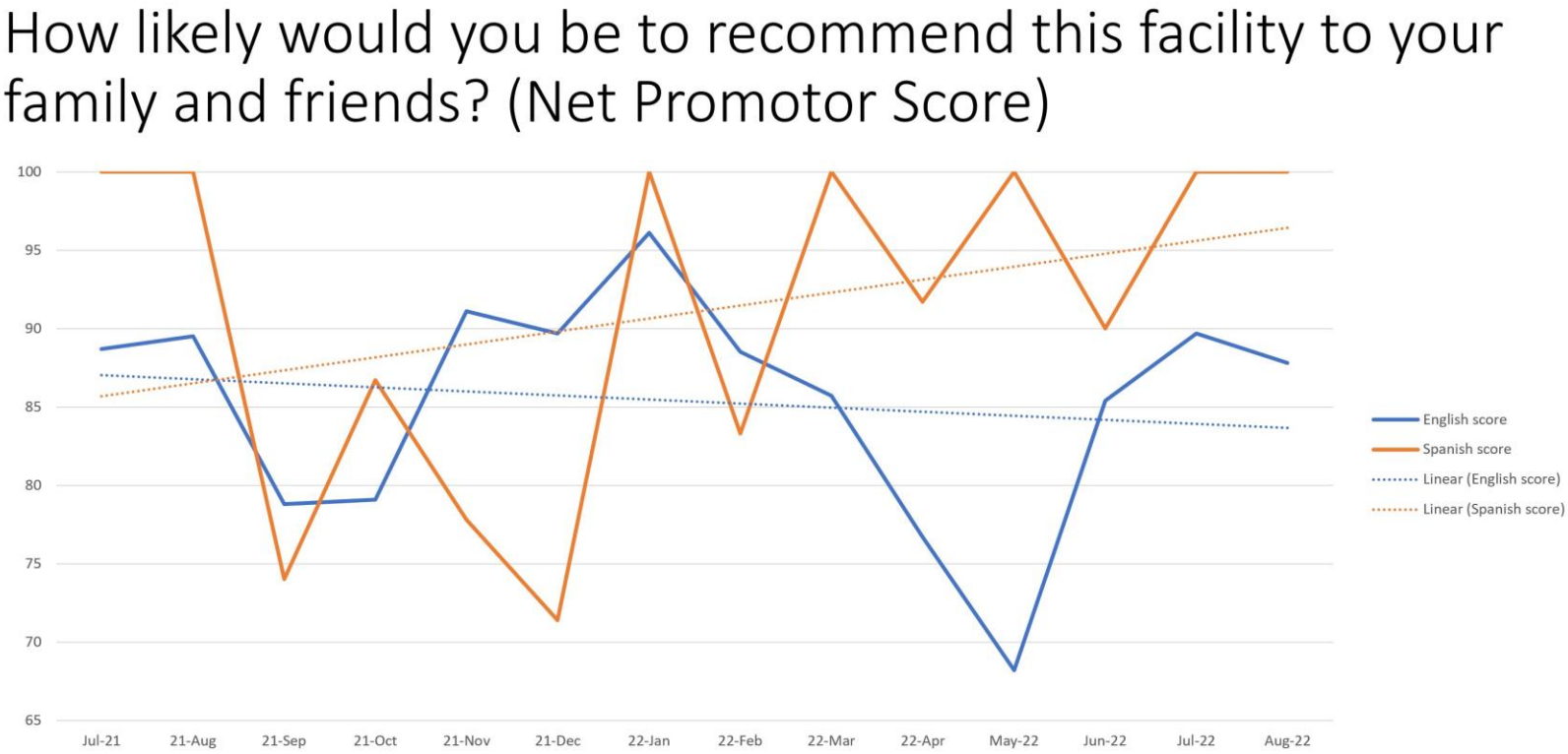
Commit to Sit Observation Tool

Date	**Clinician Observed**	**Sat during interaction**	
	Anesthesia Team Interpreter OR RN Other Perianesthesia RN Surgery Team	Y= >50% of the interaction	N= <50% of interaction
Weekly Total			

Note. Data collection tool converted into Qualtrics, a web-based program to enable mobile phone use for data collection and reporting.

Figure 7

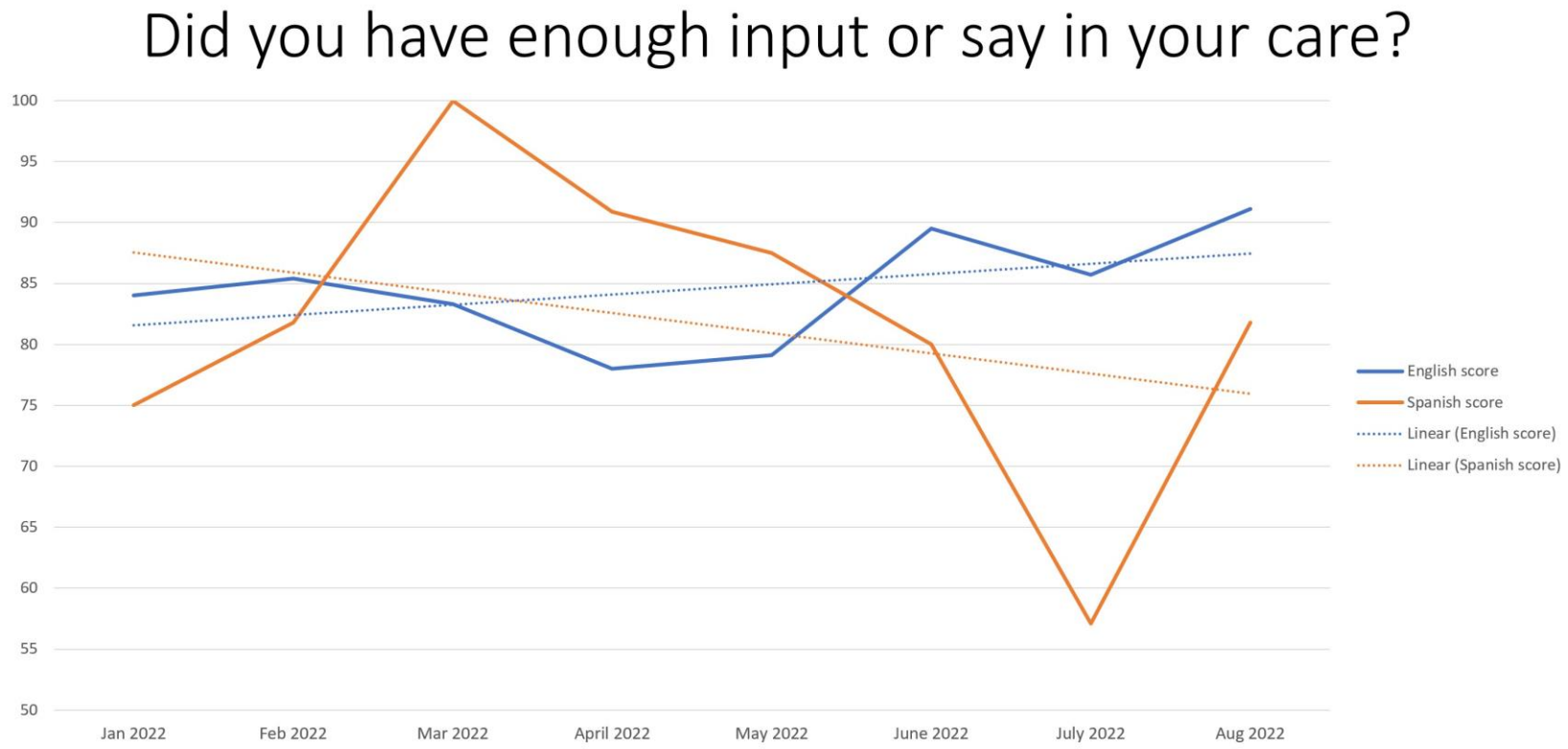
Patient Satisfaction Chart 1



	Jul-21	21-Aug	21-Sep	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-June	22-July	22-Aug
English n	62	57	66	67	56	39	51	52	56	43	44	41	29	49
Spanish n	11	10	8	15	9	7	9	12	10	12	10	10	7	23

Figure 8

Patient Satisfaction Chart 2



	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-July	22-Aug
English n	3	50	48	54	41	43	38	28	45
Spanish n	2	8	11	9	11	8	10	7	22

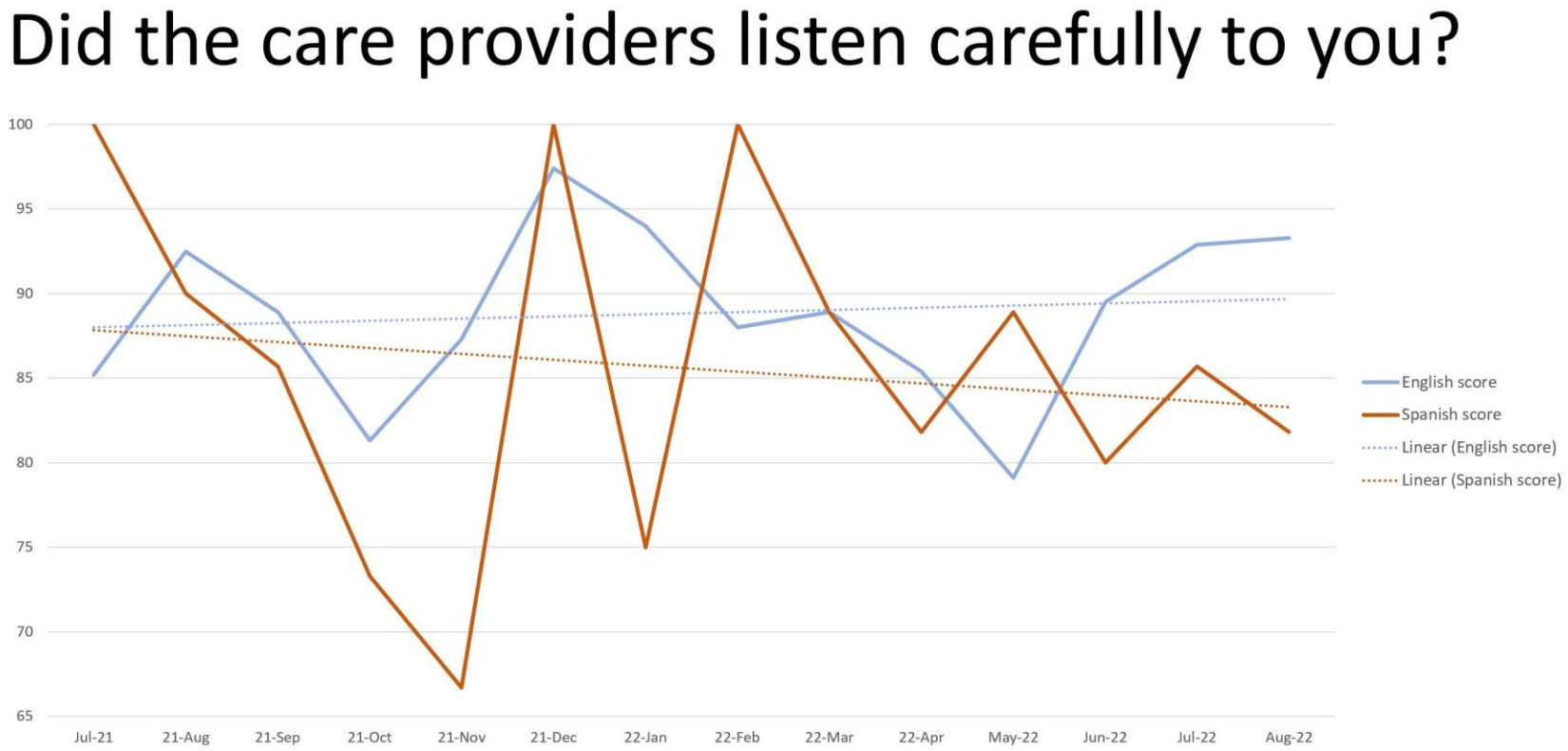
Figure 9

Patient Satisfaction Chart 3

	Jul-21	21-Aug	21-Sep	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-June	22-July	22-Aug
English n	61	55	64	64	55	39	50	50	55	42	43	28	39	46
Spanish n	11	10	7	15	9	7	8	11	10	11	9	7	10	22

Figure 10

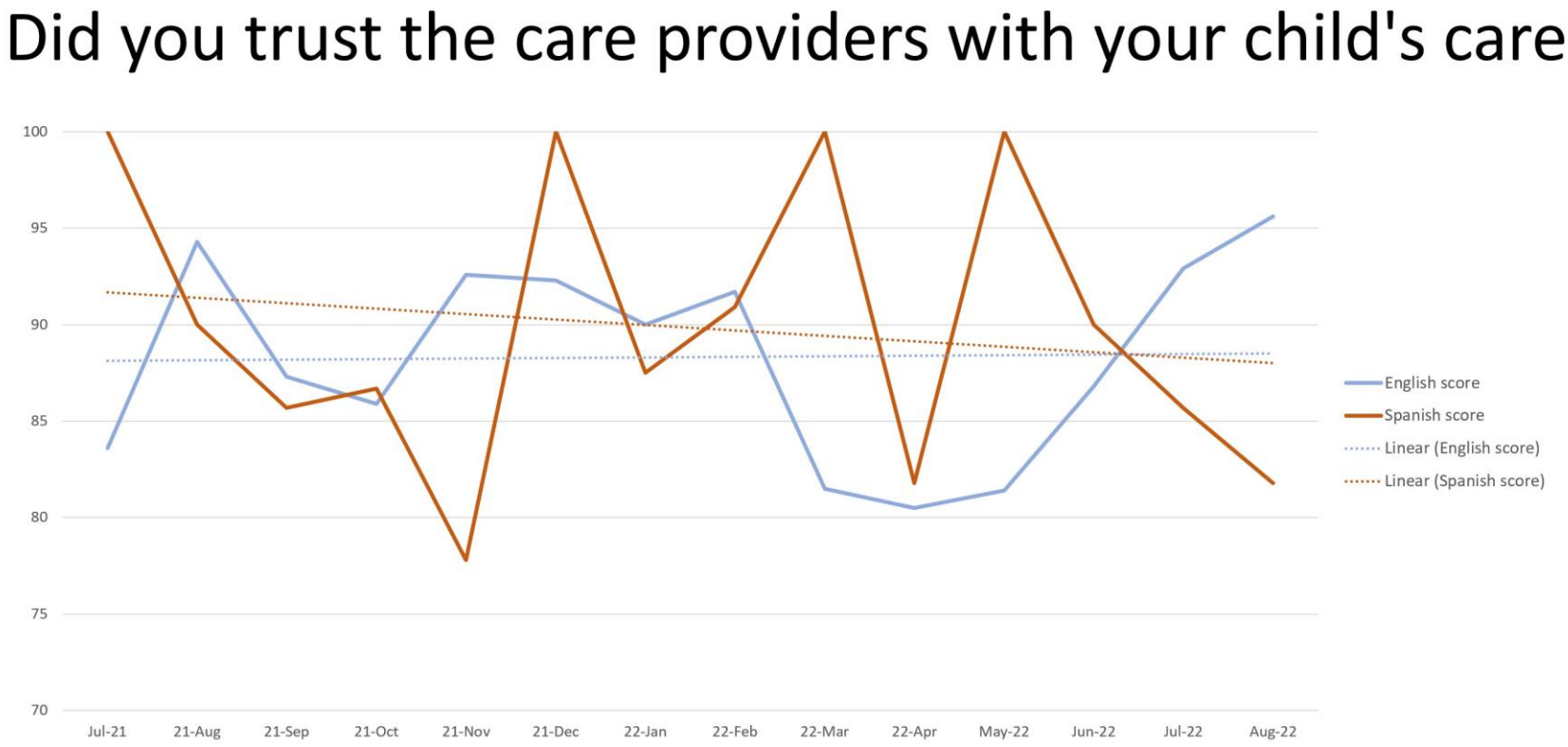
Patient Satisfaction Chart 4



	Jul-21	21-Aug	21-Sep	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-June	22-July	22-Aug
English n	61	53	63	64	55	39	50	50	54	41	43	38	28	45
Spanish n	11	10	7	15	9	7	8	11	9	11	9	10	7	22

Figure 11

Patient Satisfaction Chart 5



	Jul-21	21-Aug	21-Sep	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-June	22-July	22-Aug
English n	61	53	63	64	54	39	50	48	54	41	43	38	28	45
Spanish n	11	10	7	15	9	7	8	11	9	11	8	10	7	22

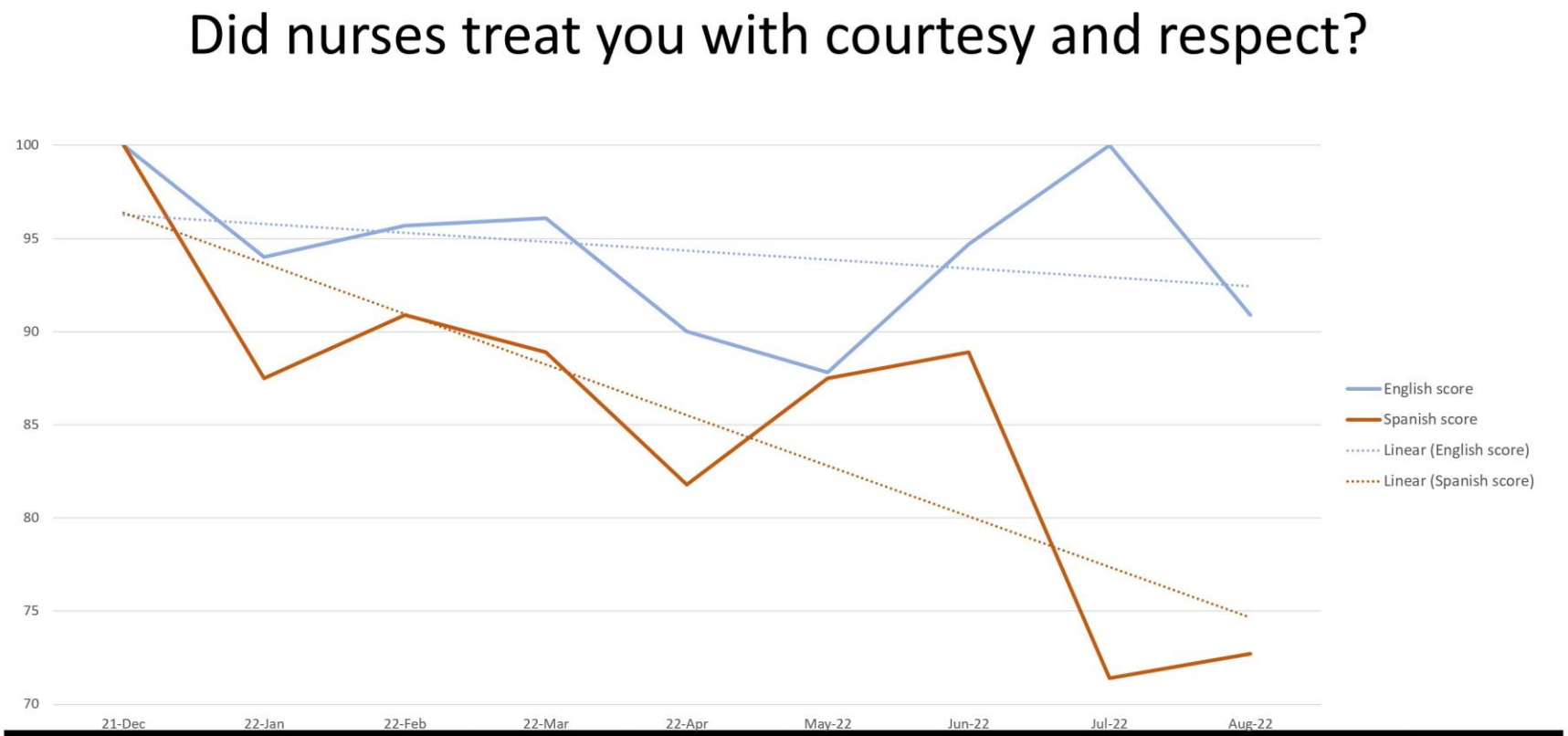
Figure 12

Patient Satisfaction Chart 6

	Jul-21	21-Aug	21-Sep	21-Oct	21-Nov	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-June	22-July	22-Aug
English n	61	52	63	64	54	39	50	48	53	41	43	38	28	45
Spanish n	11	10	7	15	9	7	8	11	9	11	8	9	7	22

Figure 13

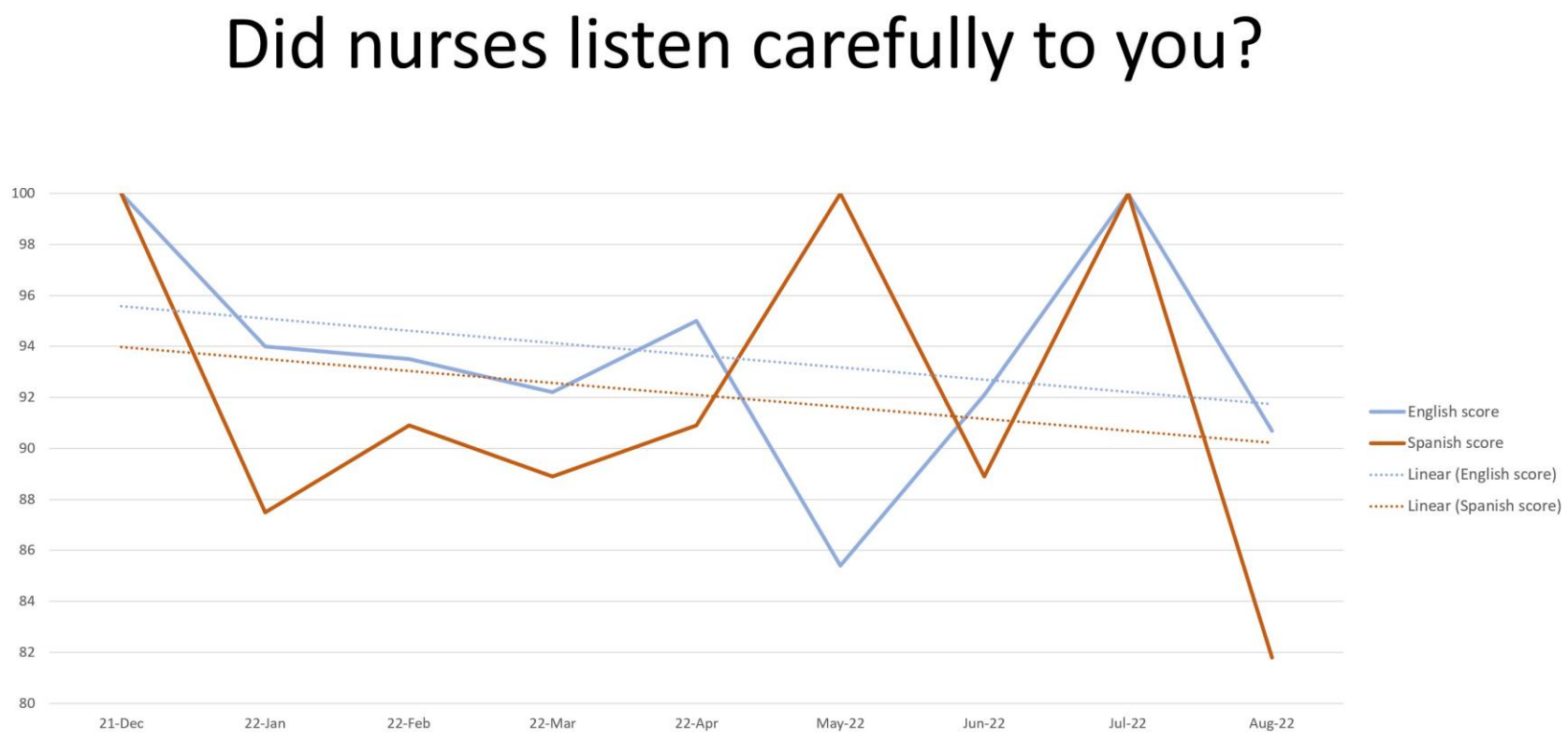
Patient Satisfaction Chart 7



	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-July	22-Aug
English n	3	50	47	51	40	41	38	27	44
Spanish n	2	8	11	9	11	8	9	7	22

Figure 14

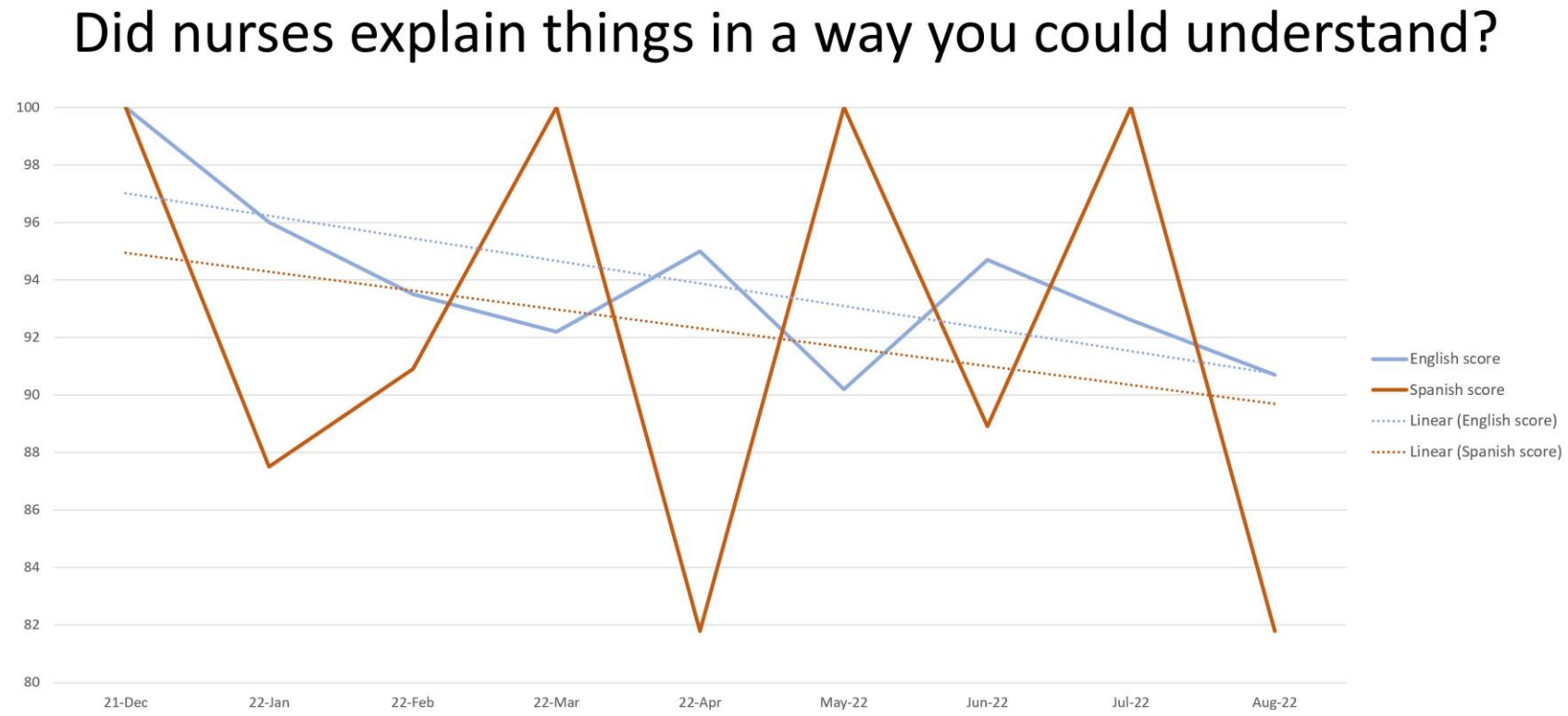
Patient Satisfaction Chart 8



	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-July	22-Aug
English n	3	50	46	51	40	41	38	27	43
Spanish n	2	8	11	9	11	8	9	7	22

Figure 15

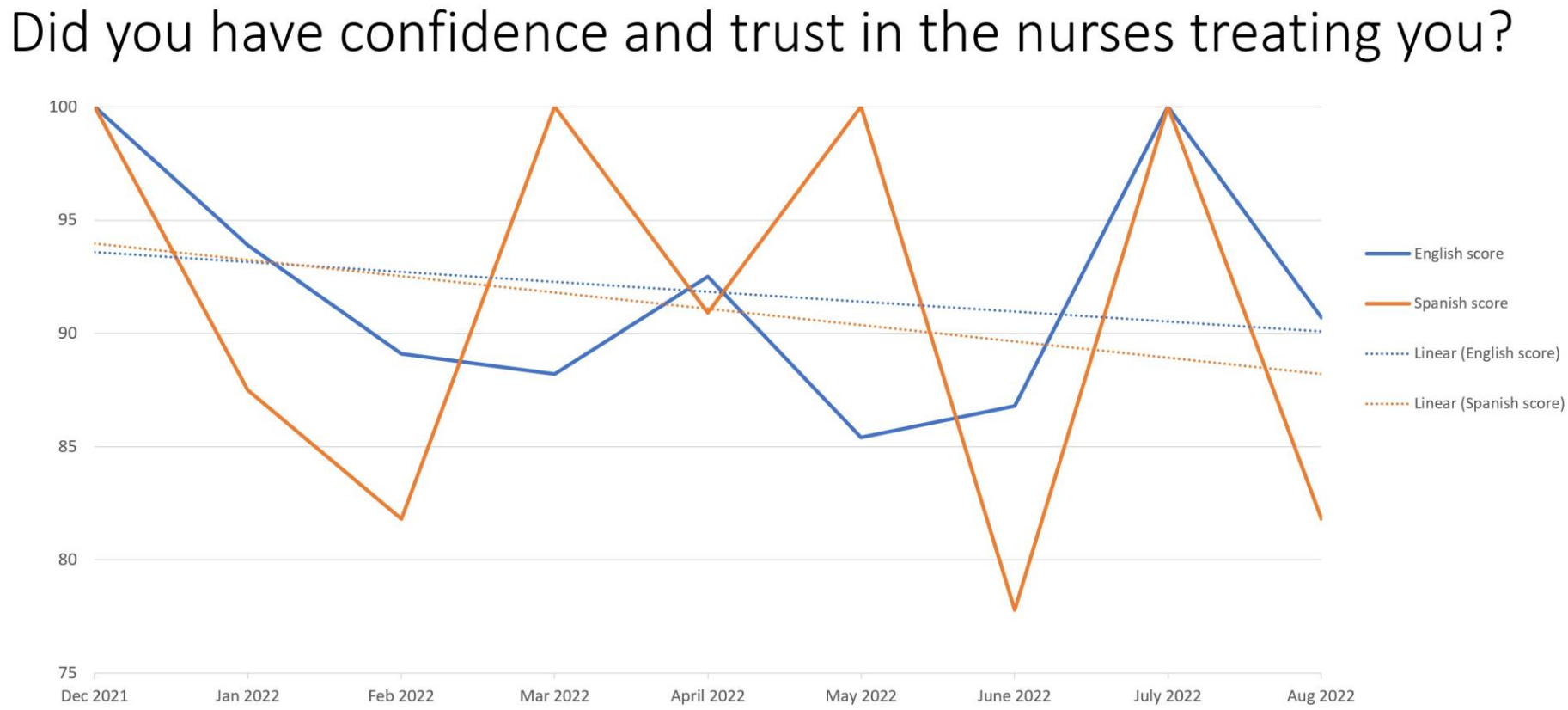
Patient Satisfaction Chart 9



	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-July	22-Aug
English n	3	50	46	51	40	41	38	27	43
Spanish n	2	8	11	9	11	8	9	7	22

Figure 16

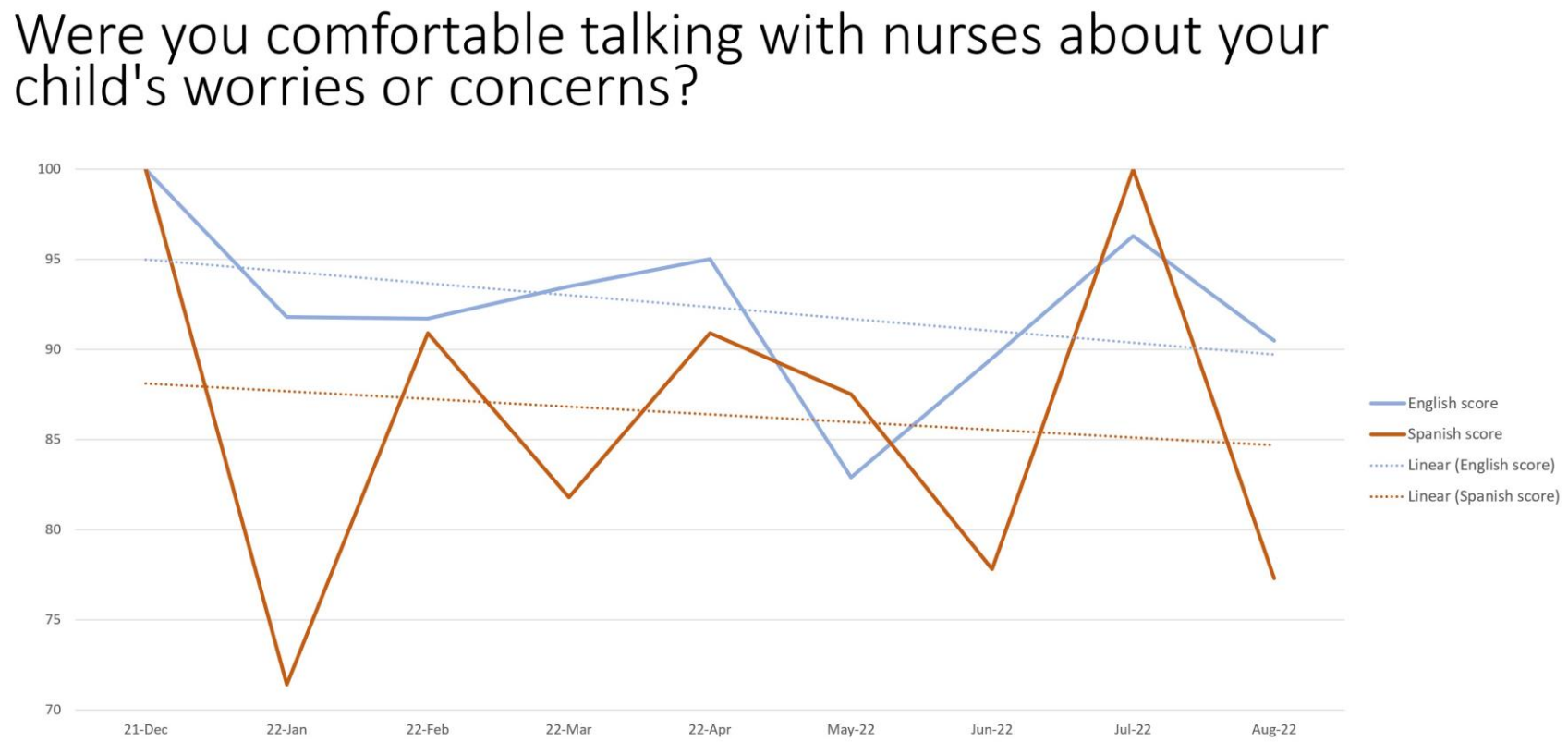
Patient Satisfaction Chart 10



	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-June	22-July	22-Aug
English n	3	49	46	51	40	44	39	27	43
Spanish n	2	8	11	9	11	10	9	7	22

Figure 17

Patient Satisfaction Chart 11



	21-Dec	22-Jan	22-Feb	22-Mar	22-Apr	22-May	22-Jun	22-July	22-Aug
English n	3	49	48	46	40	41	38	27	42
Spanish n	2	7	11	11	11	8	9	7	22

Figure 18

Budget

EXPENSES			
Direct	**Unit Cost**	**Units**	**Total**
Stools	$150	12	$1800
Printing Flyers			$100
Total Expenses			
$3200			
REVENUE			0
Net Balance			**$1900**

Figure 19

Population Definition

Name of Population	Pediatric patients and families/caregivers scheduled for outpatient surgery
Outcomes measured in this population?	Patient/family/caregiver satisfaction
Intervention?	Preoperative education video & clinicians sitting with them during periop interactions
Group receiving intervention	All surgery patients/families/caregivers
Criteria for inclusion	All surgery patients/families /caregivers
Criteria for exclusion	No exclusion criteria
Demographic variables collected	None collected
Time frame for measurement	8 weeks starting 6/1/22
Group used for comparison to intervention group	Same population pre-intervention

Figure 20

Population Definition

Name of Population	Clinicians in the pediatric perioperative department that interact with patients/family/caregiver
Outcomes measured in this population?	Percentage of times sitting while interacting with patients/family/caregiver
Intervention?	Education regarding benefits of sitting with patients/family/caregiver
Group receiving intervention	All clinicians: surgeons, anesthesia providers, RNs, NPs, Pas, child life service providers, interpreters, social workers
Criteria for inclusion	All clinicians
Criteria for exclusion	No exclusion criteria
Demographic variables collected	Role
Time frame for measurement	8 weeks starting 6/1/22
Group used for comparison to intervention group	No comparison group

Appendix A

NRC Health Questions

Question	Intervention Target
1. How likely would you be to recommend this facility to your family and friends? (Net Promotor Score)	All
2. Did you have enough input or say in your care?	Sitting
3. Did you feel that the staff cared about your child as a person?	Sitting
4. Did the care providers explain things in a way you could understand?	Periop Education Video
5. Did the care providers listen carefully to you?	Sitting
6. Did you trust the care providers with your child's care?	Sitting
7. Did your child's doctor or anyone from the facility explain the process of anesthesia, including possible side effects, in a way that was easy to understand?	Periop Education Video
8. Did nurses treat you with courtesy and respect?	Sitting
9. Did nurses listen carefully to you?	Sitting
10. Did nurses explain things in a way you could understand?	Periop Education Video
11. Did you have confidence and trust in the nurses treating your child?	Sitting
12. Were you comfortable talking with nurses about your child's worries or concerns?	Sitting

Appendix B

Summary of Primary Research Evidence

Citation	Design, Level Quality Grade	Sample Sample size	Intervention Comparison	Theoretical Foundation	Outcome Definition & Measurement	Usefulness Results Key Findings
Dwairej et al., 2020.	Randomized Control Trial Level I Quality A	Children (N=128) between 5-11 years old. The experimental (N=64) and control group (N=564) admitted for outpatient surgery.	Intervention group received distraction through a handheld video game and anesthesia mask exposure and activity to breathe with the mask over the child's face.	Lazarus and Folkman stress appraisal and coping theory	Children's anxiety using mYPAS Induction compliance measured using induction compliance checklist. Pediatric Anesthesia Emergence Delirium Scale also used to measure severity of delirium.	Fewer children in the intervention group demonstrated poor anesthesia induction compliance. The intervention group has a lower anxiety level at the time of transfer to the OR and during induction. The children in the intervention group did not experience a rise in anxiety at the time of anesthesia induction compared to the control group.
Chartrand, et al., 2017	Randomized Control Trial Level I Quality A	Parent dyads (N=105) of pediatric surgery patients with an experimental (N=49) and	20 minute surgical virtual tour & 12 minutes video, "You and Your child in the Recovery Room"	Gagné's learnt capabilities	Primary outcome measured was the parents' participation behavior using Parental Behaviors Inventory. Secondary	No difference in anxiety between groups. Parents in intervention group acquired greater knowledge and used cognitive strategies in PACU (+

		control group (N=56).			outcomes measured were parent's knowledge acquisition measured with a questionnaire and parent's anxiety using VAS and STAI. Children's distress was measured using an observations scale and pain measured using the Modified Children's Hospital of Eastern Ontario Pain Score (mCHEOPS). Children's analgesic requirements and length of recovery were also measured.	reinforcement, distraction, relaxation). Children in the experimental group had decreased post-op pain. Education focused in preparing the parent for their child's emergence from anesthesia.
Matthyssens et al., 2020	Randomized Control Trial Level I Quality A	Children (N=72) between 7-8 years old. Experimental group (N=25), non-educational game group (N=22) and control group	A) CliniPup Serious game. B) Game with no educational information c) no game, current standard of care.		Anxiety and pain measured using VAS. Parental anxiety measured using STAI. Post-op behavior measured using the Post Hospitalization Behavior Questionnaire for	Children who played ClinicPup before surgery had statistically reduced anxiety compared to their baseline and to children that played no game. No difference in the anxiety of parents.

		(N=25) all scheduled for ambulatory surgery.			Ambulatory Surgery.	
Clausen et al., 2021	Randomized Control Trial Level I Quality B	Children (N=60) between 3-6 years old. The experimental (N=30) and control group (N=30) scheduled for elective surgery.	Intervention was a tablet with the choice of 50 different age-appropriate online games.		Children's anxiety measured using mYPAS. Emergence delirium measured using the Pediatric Anesthesia Emergence Delirium Scale. Pain assessed using the Face, Legs, Activity, Cry, Consolability (FLACC) scale for children < 7 years old and visual analog scale (VAS) for children >7 years old.	Initial anxiety measured post-op was lower in the experimental group. Pain and emergence delirium was not different between groups.
Bartik & Toruner, 2018	Quasi experimental design Level II Quality B	Children and their primary caregivers (N=73) scheduled for surgery.	Preop preparation program: verbal info , instruction booklet, telephone counseling. a) Child: information using a play doll, coloring book on surgery		For children, the Koppitz Human Figure Drawing Test was used to assess emotional state. (kappa value between 0.375 and 1.00) Socioeconomic characteristics measured by the Characteristics of	Anxiety was reduced in the intervention group. Parental satisfaction was higher in the intervention group.

					Children and Caregivers Data Form. The Peds QL Health Care Parental Satisfaction Scale was used to measure parent's satisfaction with medical care of their child. STAI was used to measure parental anxiety.	
Coşkuntürk & Gözen, 2018	Randomized Control Trial Level I Quality B	Children and their mothers (N=43) between 6-12 years old. The experimental (N=23) and control group (N=20) scheduled for cardiac surgery.	Intervention was an educational booklet about the PICU reviewed with the researcher and child-mother. A teddy bear was used as a therapeutic toy to use in a 30' play education session with the duo and researcher. They were then taken on a tour of the PICU.		Children's anxiety using STAIC. Mother's anxiety measured using the Beck Anxiety Inventory (BAI).	Post-op anxiety levels in patients and their mothers were lower in the intervention group. BAI scores of the mothers were significantly lower in the post-op period.
Nair et al., 2018	Randomized Control Trial Level I Quality A	Pediatric patients between 6-7 years old. (N=113) The control group	Pre-op kit with animated video on preop preparation and activity sheets		Children's behavior and emotion measured using the Children's Emotional Manifestation	Anxiety reduced in 7-10 year olds. No other differences noted. No way to assess compliance and understanding of patient.

		(N=54) and experimental group (N=59) all schedule for surgery.			Scale. Children's anxiety measured using STAIC, Induction Compliance Checklist and VAS. Parent's anxiety measured using STAI.	
Newell et al., 2020	Retrospective cohort study Level III Quality C	96 participants (4 patients and 93 parents) who had surgery. Intervention participants (N=32) and control group (N=65) had surgery.	Participation in Surgery 101 program; a program run by child-life specialists to orient patients and families through in-hospital sessions on surgery expectations		A survey sent to participants to compare surgical experience between participants in program with non-participants.	Participants felt better prepared for surgery. Identified barriers included difficulty to schedule, distance to hospital and lack of awareness.
Landier et al., 2018	Randomized Control Trial Level I Quality B	Parents (N=178) of children scheduled for surgery with an experimental (N=88) and control group (N=90).	Controls group received spoken information only (standard practice). Intervention was spoken information supported by a leaflet on preoperative preparation.		Parent's anxiety measure using VAS and Amsterdam Preoperative Anxiety and Information Scale (APAIS). Parental knowledge assessed using questionnaire.	Parental satisfaction was higher with written documentation as well as a reduction in anxiety. One of the main reasons for anxiety, after fear of anesthesia and surgery, was fear of the unknown.
Seyedhejazi et al., 2020	Randomized Control Trial	Children (N=48) between 8-9	a) 0.5mg/kg oral midazolam		Children's anxiety measured using STAIC.	No anxiety or blood pressure differences between the two

	Level I Quality A	years old. The experimental (N=24) and control group (N=24) admitted for adenotonsillectomy without underlying disease.	pre-op b) Psychological preparation with booklet about anesthesia and OR practice and prep with anesthesia resident			groups; anxiety decreased in both groups on the morning of surgery.
Jin et al., 2021	Randomized Control Trial Level I Quality A	Children (N=100) between 3-6 years old. The experimental (N=50) and control group (N=50) scheduled for strabismus surgery.	10 minute audio/visual movie viewed 3x.		Children's anxiety using mYPAS and parent's anxiety measured using STAI. Emergence agitation was also measured by PACU RN.	Anxiety was reduced in both patients and parents in the intervention group. Levels of emergence agitation were lower in intervention group. Video was created using the actual setting as the background with a popular cartoon character narrating. The children modeled the characters behavior in surgery.
Hatipoglu et al., 2018	Randomized Control Trial Level I	Children (N=99) between 5-12 years old. Audiovisual group	1 week prior to surgery: Audiovisual group show presentation to inform about preop preparation		Children's anxiety measured using m—YPAS. Post-op maladaptive behaviors measured using	m-YPAS scores lower in audiovisual group. Control group had higher PHBQ scores.

	Quality B	(N=33), auditory group (N=33) and control group (N=33) all scheduled for elective ambulatory surgery.	and post-op period. Auditory group were given audio recording of the video without visuals. Control group were verbally informed of anesthesia (usual practice)		post-hospitalization behavioral questionnaire (PHBQ).	
Aranha et al., 2018	Quasi-experimental Level II Quality B	Parent of children (N=110) that underwent surgery. Experimental group (N=55), and control group (N=55) all scheduled for elective surgery.	Multimodal preoperative preparation program (MPPP) for parent and child: video, tour, handling of equipment, medical play, pamphlet, interactive session with researcher.		Parental anxiety measured using STAI.	Parental satisfaction higher in experimental group. Lower anxiety in experimental group.
Tural Buyuk & Bolişik, 2018	Quasi-experimental Level II Quality B	Mothers of children (N=300) undergoing surgery. Education group (N=100), education & game group (N=100) and control group	Education was an educational booklet with admission into OR, postop care, and home care. Video included same info. The game group participated in games with their children with various games and		Parental anxiety measured using STAI	STAI scores lower in education group and education + game group than control. No difference between education group and education + game group.

		(N=100)	medical tools.			

Legend:

STAIC- State-Trait Anxiety Inventory for Children. Alpha reliability internal consistent coefficients for A-state: .82 males and .87 for females. A-trait: .78 for males and .81 for females. Test-test reliability coefficients for A-trait: .65 for males and .71 for females. A-state: .31 for males and .47 for females. (Endler, 1978)

mYPAS- modified Yale Preoperative Anxiety Scale

STAI- Spielberger State-Trait Anxiety Inventory

Preop: preoperative

Post-op: Post-operative

Appendix C

Summary of Systematic Reviews (SR)

Citation	**Quality Grade**	**Question**	**Search Strategy**	**Inclusion/ Exclusion Criteria**	**Data Extraction and Analysis**	**Key Findings**	**Usefulness/Recommendation/ Implications**
Rantala et al., 2020	Level I Quality A	1.What kind of web-based mobile health interventions are used in pediatric patients? 2.What is the effectiveness	Databases: CINAHL, Scopus, Ovid MEDLINE, Web of Science, and CENTRAL (Cochrane Central Register of Controlled	Inclusion criteria: pediatric patients ,18 years old, web based mobile health intervention; pain, anxiety and satisfaction outcomes and randomized control-trial study design.	2 reviewers. 6 RCTs included in the meta-analysis and analyzed for children's pre-op anxiety.	Web-based mobile interventions are an effective distraction tool for pediatric patients and for reducing anxiety. Increase parental satisfaction during separation. There	All interventions required access to a mobile device or tablet with internet access.

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
		of web-based mobile health interventions on reducing pediatric patients' anxiety and pain during a day surgery? 3.What is the effectiveness of web-based mobile health interventions on reducing parental anxiety and increasing their levels of satisfaction?	Trials) Search terms: ambulatory surgery or outpatient or day surgery and children or adolescence or infant or pediatric and tablet or mobile application or mhealth or medical technology or telemedicine or smartphone or cell phone or mobile phone or mobile device or mobile communication or mobile technology or ehealth or connected health or information system or game or gamification and randomized controlled trial			were no consistent conclusions about the effect on pain.	

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
Kim et al., 2019	Level II Quality A	What is the impact of technology-based preoperative preparation programs on anxiety for both patient and parents?	PsychINFO, Medline, EMBASE and CINHL databases searched using terms: anxiety, preoperative, pediatric, parents/guardians	Inclusion: pediatric patients with a technology intervention such as videos, tablets, web programs or virtual-reality programs. 35 RCT and 5 non RCT studies (level II-III).	4 reviewers, 38 studies.	Anxiety was reduced in 25/38 studies for children and 11/38 for parents. 8/18 studies showed reduction of anxiety for both children and parents. Using a tablet or handheld device to distract children was the most consistent at reducing anxiety. Preop videos in combination with practice was effective for children in 5/6 studies.	Interventions for reducing parental anxiety were mixed, with preoperative videos more effective. There was likely variability in video content, methodology, anxiety measurement.
Dai & Livesley, 2018	Level III Quality A	1.To assess the effectiveness of different approaches of preoperative psychological preparation (PPP)	7 databases searched. The search terms, including appropriate subject headings and wildcards of pediatric patient, preoperative psychological program and	Inclusion- Pediatric patients scheduled for routine surgery using any non-pharmacological intervention. Outcomes were patient or parent's anxiety.	4 Reviewers, 29 studies in the final synthesis divided by study type; experimental (18), qualitative (10) and 1 mixed-method.	Types of interventions: Therapeutic play, booklets/pamphlets, videos, web-based programs and multi-component programs. Strongest evidence to support reduction in anxiety were videos and	Interventions need to be focused on the individual needs of the child and the parent; one intervention does not work for both. There may be gaps based on the needs of the patient and family compared to the available intervention. PPP that

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
		interventions 2.To explore individual parent and children's experiences and acceptability of PPP programs.	preoperative anxiety, were combined in MEDLINE and adjusted according to the indexing systems of other databases			web-based programs.	identify children's coping styles and their parents' coping styles, give children realistic information and provide coping skills training, may be most effective in reducing PPA.
Gabriel et al., 2018	Level III Quality A	What are the patients' and parents' psychosocial experiences of undergoing pediatric surgery and needs in the perioperative periods?	Medline, EMBASE and PsychInfo databases were used.	Inclusion criteria: pediatric surgery, patient and/or parent psychosocial experiences in surgery were included, original and English publications and was not an intervention study	Kmet's quality assessment tool by two reviewers. 11 studies assessed totaling 1,307 pediatric patients. 2 reviewers assessed 5 qualitative studies and 6 quantitative studies.	Children have largely negative experiences of surgery, particularly during the pre-op examination. Parents have largely negative experiences in the perioperative environment.	Parents need more information and accessible health care professionals. Anxiety experienced by children has long term effects up to one year after surgery. Monitoring parents' psychological status in the surgical period is key.
Sullivan et al., 2021	Level III Quality B	What are the themes on interventions in place to reduce child and parent	Several databases including gray literature searching for terms related to perioperative	Inclusion criteria were pediatric or parent perioperative interventions. Exclusion criteria not described.	Themes emerged around interventions to reduce child anxiety, parent and child	Pharmacological and non-pharmacological interventions discussed to reduce child stress.	Using a family centered approach is useful. Consider audiovisual interventions to reduce stress.

Citation	Quality Grade	Question	Search Strategy	Inclusion/ Exclusion Criteria	Data Extraction and Analysis	Key Findings	Usefulness/Recommendation/ Implications
		perioperative anxiety?	anxiety, child surgery and child stress.		relationship as it relates to stress and interventions to reduce parental anxiety.	Mothers have greater stress than fathers. Audiovisual interventions have a modest positive effect on parental and child anxiety levels.	

Appendix D

Variable Table

Variable	Type of Outcome	Brief Description	Data Source	Possible Range of Values	Level of Measurement	Time Frame for Collection	Statistical Test	Benchmark	Benchmark met
Patients/ Family receiving preoperative education video	Process/ Intervention	Number of patients that were given access to pre-op video via link or QR code	YouTube video view count	Yes/ No	Dichotomous (Nominal)	Weekly during intervention period	N/A	50% of all patients receiving preoperative education by September 1, 2022	No
Action of Sitting by Clinician	Process/ Intervention	Rates of clinicians that sat during interactions with patients and families	Observation Collection Tool	Yes/ No	Dichotomous (Nominal)	Weekly during intervention period	N/A	By July 23, 2022, at least 50% of the clinicians will sit during their interactions with pediatric patients and families or caregivers during their interactions in the pre-operative holding area.	No

Patient/Family Satisfaction	Perceptual	Survey Questions Analyzed: Did you feel that the staff cared about your child as a person? Did the care providers listen carefully to you? Did your child's doctor or anyone from the facility explain the process of anesthesia, including possible side effects, in a way that was easy to understand? Did nurses treat you with courtesy and respect?	NRC Health Survey Data. Qualitative & Quantitative from comments	0-100 %	Scale (Interval)	Pre-Intervention (baseline), Mid-Intervention, Post 1 (immediately following intervention), Post 2 (1 month after)	*t*-test used to compare results pre-intervention and post-intervention	By September 1, 2022, the results from the specific NRC Health survey questions relating to satisfaction and communication from surgical pediatric patients discharged from the PACU will improve by 10% as the result of enhanced perioperative preoperative communication by perioperative clinicians.	No

		Did nurses listen carefully to you? Did nurses explain things in a way you could understand? Were you comfortable talking with nurses about your child's worries or concerns?							
Patient/Family Satisfaction of Spanish speaking patients/families	Perceptual	Same questions as above.	NRC Health Survey Data. Qualitative & Quantitative from comments and Narrative Dx	0-100 %	Scale (Interval)	Pre-Intervention (baseline), Mid-Intervention, Post 1 (immediately following intervention), Post 2 (1 month	*t*-test used to compare results pre-intervention and post-intervention	By providing preoperative patient education to the patient and family in both English and Spanish, Spanish speaking patients will have NRC Health satisfaction and communicatio	Yes, no statistical difference in mean outcomes between Spanish and English groups in the post-intervention phase.

						after)		n scores within an 8% range of English speaking patients	

Appendix E

Outcome Measurements & Evaluation

Intervention	Outcome Measurement	Measurement Tool	Outcome Evaluation
Sitting	Yes = Clinician sat with patient > 50% of total interaction	Electronic Data Collection Tool (Qualtrics)	Increase of Yes: No over time
	No = Clinician sat with patient < 50% of total interaction		
	Increase in trust & communication with clinicians	NRC Health Survey	Did you have enough input or say in your care?
			Did you feel that the staff cared about your child as a person?
			Did you have confidence and trust in the nurses treating you?
			Did the care providers listen carefully to you?
			Did you trust the care providers with your child's care?
			Did nurses treat you with courtesy and respect?
			Did nurses listen carefully to you?
			Were you comfortable talking with nurses about your child's worries or concerns?
Periop Video	Available and viewed by 50% of all patients by 9/1/22	YouTube views	Increase over time
		Patients surveyed upon surgery check-in	Viewed by all patients
	Increase in understanding of healthcare information	NRC Health Survey	Did the care providers explain things in a way you could understand?
			Did your child's doctor of anyone from the facility explain the process of anesthesia, including possible side effects, in a way that was easy to understand?
			Did the nurses explain things in a way you could understand?
	Provide comparable experiences for English and Spanish preferred language patients and families		Analysis of results between English and Spanish preferred language patient.