Education of Staff Nurses on the Implementation of a Standardized Clinical Care Pathway for Patients Who Undergo Correction of Pectus Excavatum

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Abstract

Objective*:** Educate staff nurses on a new standardized clinical care pathway (SCCP) for Nuss Procedure patients to decrease the length of stay, decrease hospital costs, decrease postoperative complications, and improve pain control. ***Design*:** Evidence-based practice improvement initiative. ***Setting/Local Problem: An inpatient surgery unit at a local pediatric medical center with no previous standardized care plan for Nuss Procedure patients. ***Participants***: All staff nurses working on the inpatient surgery unit of a pediatric medical center. ***Intervention/Measurements***: An SCCP was created by a multidisciplinary care team. All staff nurses on the inpatient surgery unit at a local pediatric medical center were assigned an online education module to evaluate pre/post-knowledge of nursing care from a standardized clinical care pathway for patients after receiving the Nuss Procedure. Chart audits were completed to assess staff nurses' utilization of the SCCP on patients undergoing the Nuss Procedure to assess patient outcome measures and length of stay. This project aimed to enhance policies and protocols and decrease Nuss patients' length of stay, which in turn improves patient outcomes and healthcare costs. ***Results***: Fourteen out of 32 staff nurses completed the nursing education module, with a 44% compliance rate. Pre-test score (M = 9.07, SD = 1.27). Post-test score (M = 10.71, SD = 0.47). Patient length of stay decreased from M = 4.2 days in 2020 to M =2 days in 2022 (p = 0.001). Chart audits revealed that the nursing staff adhered to charting patient diet and hygiene, not ambulation or incentive spirometry use. ***Conclusion***: Implementation of an SCCP leads to decreased postoperative length of stay in Nuss Procedure patients. In nursing staff, post-knowledge assessment scores were higher than pre-knowledge assessment scores. The nursing staff adhered to charting measures pre-populated in the electronic charting system but showed poor compliance in charting interventions that needed to be manually added to the patient chart.

Adherence to a daily patient checklist could not be assessed due to the misplacement of the checklists upon patient discharge.

Keywords: pectus excavatum, funnel chest, Nuss Procedure, Nuss, standardized clinical care pathway, enhanced recovery after surgery pathway, nursing education, multidisciplinary

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Pectus excavatum (PE) is the most common congenital chest wall deformity and occurs in one out of every eight children per 1,000 births, with a male predominance of 4:1 (Gurria et al., 2020). Upon physical examination, PE is exhibited through a centrally depressed sternum. In 1987, Dr. Nuss created a minimally invasive technique to correct PE using thoracoscopy to insert a sub-sternal bar anchored with a stabilizer and pericostal sutures. The Nuss Procedure was initially introduced in the *Journal of Pediatric Surgery* and widely accepted by the American Pediatric Surgical Association in 1998 (Nuss et al., 2016). The evidence suggests that implementation of a standardized clinical care pathway for patients who undergo the Nuss Procedure for to correct PE can improve patient outcomes related to pain management, postoperative complications, and length of stay (Gurria et al., 2020; Mangat et al., 2020).

Available Knowledge

Following the introduction of the Nuss Procedure in 1998, surgical correction of PE has become more widely adopted and a more popular option with patients. However, there are still several postoperative complications noted. Early complications following the Nuss Procedure include poor incision healing, pneumothorax, and pleural effusion. Late complications include PE recurrence, bar displacement, and rejection (Yu et al., 2020).

Rotter et al. (2010) conducted a systematic review of the benefit of implementing clinical pathways and indicated a reduction in hospital complications, improved documentation, and a significant decrease in length of stay and hospital costs. Standardizing a clinical care pathway for patients who undergo the Nuss Procedure can benefit both the patient and the organization. In 2016, Cincinnati Children's Hospital Medical Center (CCHMC) created a standardized clinical

care pathway for patients who underwent the Nuss Procedure and decreased the length of stay from 4.5 days to 3.4 days (Gurria et al., 2020). With a standardized clinical care pathway, decreased length of stay and patient outcomes and satisfaction improved. In addition, total patient charges decreased by 30% (Gurria et al., 2020). It was discovered that 19.4% of the patients' reduced charges were due to decreased length of stay. The reason for the other 11.8% decrease in total patient charges remains unclear; however, it is assumed that this could be due to decreased use of resources (Gurria et al., 2020). Mangat et al. (2020) and Wharton et al. (2020) also found that length of stay for patients who undergo the Nuss Procedure decreased after implementing a standardized care pathway. Wharton et al. (2020) specifically found that after implementing a standardized clinical care pathway for patients who undergo the Nuss Procedure, the length of stay decreased from 3.49 days to 2.9 days. Furthermore, future emergency room visits and readmissions decreased, although not statistically significant. These findings could likewise point to decreased hospital costs.

Problem Identification

Consistent with available research, the lack of an SCCP in our practice setting leads to sporadic care interventions, fluctuation in therapy interventions, variable outcomes, and a length of stay of 5-7 days (S. McQuilkin, personal communication, December 1, 2021). No multidisciplinary care approach was utilized at this pediatric facility for this patient population. Due to increasing PE and pectus carinatum patient volumes at this facility (69 total patients seen in 2020), this can be considered significant. The surgery team and inpatient surgery staff members expressed the need for an SCCP for this population group due to the current extended length of stay, decreased patient satisfaction, lack of education and feelings of uncertainty in patients and families before surgery, and a hectic postoperative healing process. Following the

creation of the SCCP specific to this organization, there was no intended nursing education to disseminate the new protocols and interventions specific to nursing care.

Specific Aims

The purpose of this evidence-based practice project was to apply the newly developed SCCP, created by the multidisciplinary team for patients who undergo the Nuss Procedure at this pediatric facility and educate staff nurses on implementing the SCCP. The project's overall aim was to enhance policies and protocols and decrease Nuss patients' length of stay, which in turn improves patient outcomes and healthcare costs.

Rationale

The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Model guided the proposed project. This model's development and reconceptualization allow organizations to cultivate a spirit of inquiry and a positive learning environment that encourages asking questions, seeking the best evidence, and implementing innovative improvements (Dang & Dearholt, 2018).

The JHNEBP Model consists of three steps: inquiry, practice, and learning. "Inquiry" is the first step of the model, which promotes an effort to question and examine a problem and collect information about the problem. The next step is "practice," which reflects the idea that nurses utilize their knowledge to care for patients. The final step, "learning," describes a culture of inquiry that encourages staff members to continuously gain new knowledge and develop new skills (Dang & Dearholt, 2018). These three overall steps interlink to help facilitate the EBP process.

The JHNEBP Model is a problem-solving approach to clinical decision-making (Dang & Dearholt, 2018). Utilizing the JHNEBP Model helped to facilitate the development and implementation of this evidence-based practice project, improve patient outcomes, and promote

quality care. The JHNEBP Model provided a detailed step-by-step process to follow that was reliable and easy to understand for implementing this evidence-based practice project. This model also promotes a thorough development of a scholarly project, starting with identifying a problem and ending with evaluating and disseminating findings after implementing the practice change. Ultimately, we aimed to improve practice for PE patients, and the JHNEBP Model is s provider, nurse, and patient focused. The end goal was to improve patient care and patient outcomes and decrease the length of stay. Selecting the JHNEBP Model is the model to utilize to achieve our goals.

PICOT Question

The PICO question for the proposed DNP Scholarly Project is "In pectus excavatum patients, how does a standardized clinical care pathway following the Nuss Procedure compared to current standard of care affect length of hospital stay?" Pectus excavatum patients can be defined as patients of any age who are inpatient following the Nuss Procedure for correction of PE. A standardized clinical care pathway would be the protocol from the start to the end of a patient who undergoes the Nuss Procedure for pectus excavatum correction. The current standard of care refers to the lack of a standardized clinical care pathway. As discussed above, this pediatric medical center has no current standard of care for this patient population. Length of hospital stay would include the patient's admission date until they leave the hospital.

Evidence Search and Appraisal

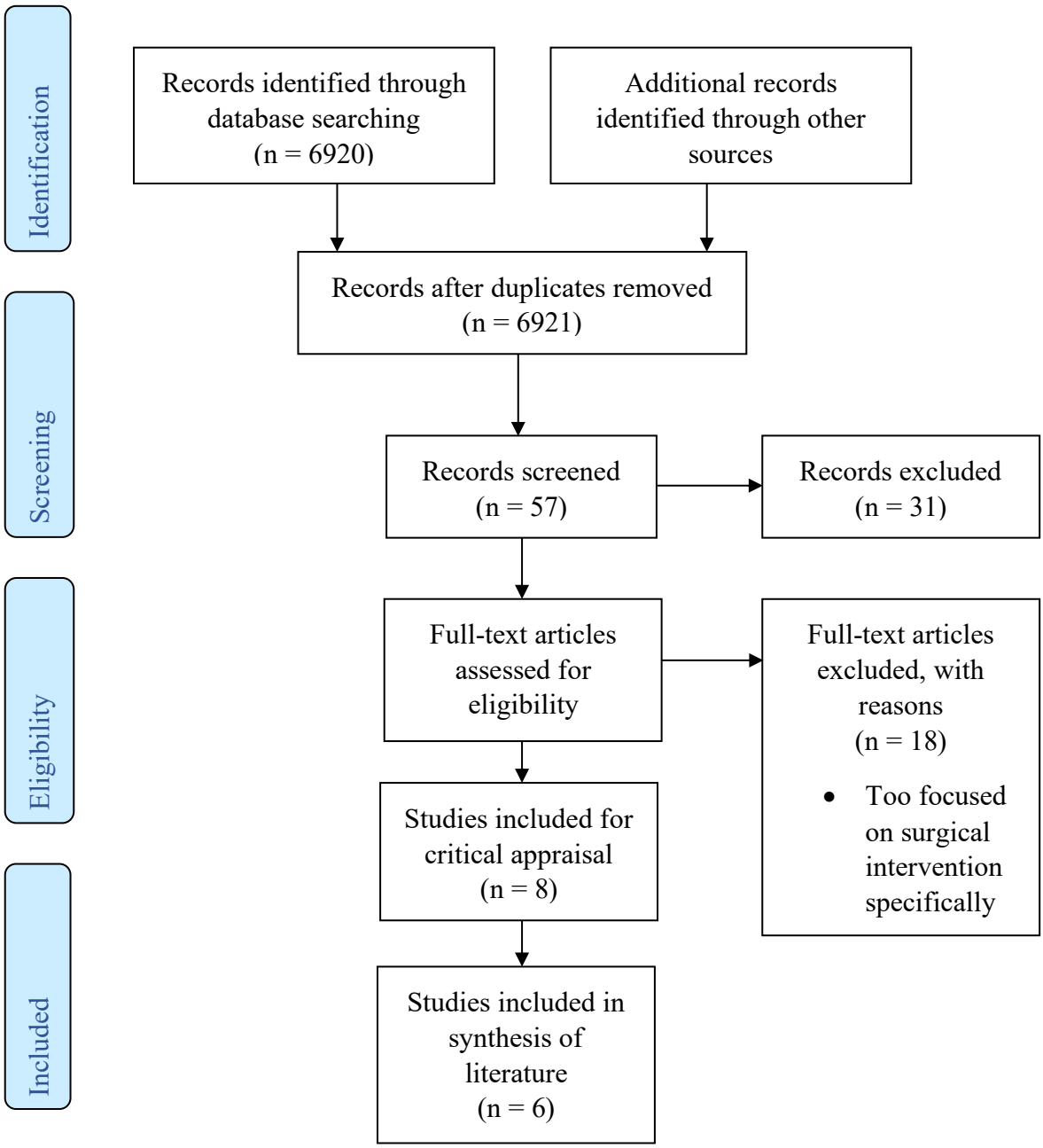
A search of the literature using the key components of the PICO question was conducted in the Cochrane, CINAHL, and PubMed databases. Key words used in this search included "pectus excavatum", "Nuss Procedure", "inpatient", "multidisciplinary", and "standard". Various combinations using Boolean connectors and truncation were utilized, including "pectus

excavatum” AND “Nuss Procedure”, (“pectus excavatum” AND “Nuss Procedure”) AND “inpatient”, (“pectus excavatum” AND “Nuss Procedure”) AND “multidisciplinary”, (“pectus excavatum” AND “Nuss Procedure”) AND “standard*”, and “Nuss Procedure” AND “multidisciplinary”. Following a meeting with university librarians, the following key search terms were discussed: "pectus excavatum" OR "funnel chest", nuss OR "minimally invasive", "standardized clinical care pathways" OR "SCCPs" OR ((standard* OR multidisciplinary OR interdisciplinary) AND (care* OR approach*)), "enhanced recovery after surgery" OR "ERAS" OR ((hospital* OR postoperative OR perioperative) AND (stay OR discharge OR readmi* OR recover*)). When combining these key search terms, the following searches were completed: ((("pectus excavatum" OR "funnel chest") AND (nuss OR "minimally invasive")) AND ("standardized clinical care pathways" OR "SCCPs" OR ((standard* OR multidisciplinary OR interdisciplinary) AND (care* OR approach*)))) AND ("enhanced recovery after surgery" OR "ERAS" OR ((hospital* OR postoperative OR perioperative) AND (stay OR discharge OR readmi* OR recover*))), and ((((("Funnel Chest"[Mesh]) OR ("pectus excavatum" OR "funnel chest")) AND (("Minimally Invasive Surgical Procedures"[Mesh]) OR (nuss OR "minimally invasive"))) AND ("standardized clinical care pathways" OR "SCCPs" OR ((standard* OR multidisciplinary OR interdisciplinary) AND (care* OR approach*)))) AND (("Hospitalization"[Mesh]) OR ("enhanced recovery after surgery" OR "ERAS" OR ((hospital* OR postoperative OR perioperative) AND (stay OR discharge OR readmi* OR recover*)))). Upon reviewing abstracts for further analysis, an assessment of inclusion and exclusion criteria was present. Inclusion criteria included articles related to a clinical pathway, protocol, or standard of care recommendations for patients who undergo the Nuss Procedure for PE. Excluded articles included research that was more closely related to the surgical process of the

Nuss Procedure. The search process is further displayed in a literal search flow diagram in Figure 1.

Figure 1

Adapted PRISMA Flow Diagram



Note. Adapted PRISMA Flow Diagram.

Synthesis of Evidence

After assigning a level and quality rating for individual sources of evidence through the critical appraisal process and completing evaluation tables, a synthesis of the evidence is depicted in Table 1. The team considers the level, quality, quantity, and consistency across the critically appraised evidence and then determines applicability to the population and setting (Dang & Dearholt, 2018, p. 52). Table 1 synthesizes the primary and secondary outcomes, including length of stay, pain scores, hospital readmissions, and postoperative complications of the SCCP intervention (SCCP). Findings from synthesized evidence suggest that the implementation of an SCCP for patients who undergo the Nuss Procedure may significantly decrease the length of stay, pain scores, and postoperative complications and clinically decrease hospital readmissions (Holmes et al., 2019; Mangat et al., 2020; Rotter et al., 2010; Wharton et al., 2020; Wildemeersch et al., 2010; Yu et al., 2020).

Patient Preference

Patient and family preferences and values are significant factors in designing an evidence-based practice project. This author was a part of a team that implemented a standardized clinical care pathway (SCCP) for patients who undergo the Nuss Procedure for correction of pectus excavatum (PE) at the pediatric medical center. The nursing staff was educated thoroughly on the components of the SCCP to provide high-quality care for Nuss Procedure patients. According to Institute for Healthcare Improvement (IHI) Open School (n.d.), patient and family-centered care are “critical to creating an environment that fosters safety and quality of care” (p. 47). Gurria et al. (2020) found that patients felt more comfortable following the implementation of an SCCP during the inpatient stay due to the educational session to set expectations before surgery, the organized post-operative time, and the set protocol for

Table 1

Synthesis Table Outcomes with use of Standardized Clinical Care Pathway

Outcome	Rotter et al., 2010	Mangat et al., 2020	Yu et al., 2020	Wharton et al., 2020	Holmes et al., 2019	Wildemeersch et al., 2018
Length of Stay[1]	↓[s]	≠	↓[s]	↓[s]	↓[s]	↑[s]
Pain Scores[2]	∅	↓[s]	∅	↓[s]	↓[s]	↓[s]
Hospital Readmissions[2]	∅	≠	∅	↓[c]	↓[c]	∅
Postoperative Complications[2]	↓[s]	≠	≠	∅	≠	∅
Sample Size	11,398 patients	55 patients	148 patients	109 patients	436 patients	122 patients
Level of Evidence	II	III	III	III	III	III
Quality of Evidence	A	A	A	A	A	B

Note. ↓=decrease; ↑=increase; ≠=no change, ∅=not discussed in study; s=statistical significance; c=clinical significance; [1]=primary outcome, [2]=secondary outcome

discharge. Routines and expectations can be critical in adequately controlling pain, increasing quality of life, and decreasing the length of hospital stay.

Methods

Setting

The practice site utilized for this evidence-based practice project is a pediatric inpatient surgery unit within a standalone pediatric medical center in East Tennessee. There are 152 inpatient beds at the pediatric facility, with 24 inpatient surgery (IPS) beds (ETCH, n.d.). Patients admitted to the IPS unit may require an inpatient hospital stay following a surgical procedure. Patients may also be admitted for postoperative complications or preoperative care. The average daily census is 18 patients. The hospital is experiencing an increased demand for the Nuss Procedure and increased competition from other pediatric facilities less than five hours away. The hospital has seen an increase in pectus patients since the creation of its Chest Wall Center in 2019, seeing 69 patients with pectus disorders in 2020 (ETCH, n.d.). While not all these patients require surgical treatment, this increase in patient volume may continue to rise.

Intervention

Intervention population. Primary participants for this evidence-based practice project included all staff nurses that are employed on the IPS unit. Demographic information was collected, including age, gender, race, ethnicity, and years of nursing experience. There were 32 staff nurses on the IPS unit. The IPS unit utilizes an acuity-based staffing algorithm, but typically 5-6 nurses are needed to staff the unit on both dayshift and nightshift (S. McQuilkin, personal communication, December 22, 2021). At the time of this project implementation, management on the IPS unit included one nurse manager and one unit educator for staff nurses. The IPS unit has since hired two assistant nurse managers. The minimum nursing degree required to work on

the IPS unit is an Associate Degree in Nursing (ADN), but many staff nurses have a Bachelor of Science in Nursing (BSN) degree. All staff nurses have a Registered Nursing License in the state of Tennessee.

Proxy patient-related data for this evidence-based practice project included any patient who undergoes the Nuss Procedure for correction of PE. Fifteen patients underwent the Nuss Procedure in 2020 and 10 in 2021. Surgical baseline data was obtained from the IPS unit manager. Five patients received the Nuss Procedure during the implementation period of this evidence-based practice project. The number of patients was limited due to project time constraints and PE patients seeking surgical correction during the implementation period.

Intervention process. A multidisciplinary care team created a standardized clinical care pathway. Nursing staff completed an initial pre-knowledge assessment with eleven questions highlighting key knowledge topics regarding pectus excavatum, the Nuss Procedure, and the SCCP created by the multidisciplinary team. The knowledge assessment was created through thorough research and consideration of many aspects of PE and the Nuss Procedure, including background information and information specific to using the SCCP. Case study questions were created to enhance the practical understanding of the educational module. Two topic experts validated the knowledge assessment questions; the unit educator and the nursing manager. In addition, the pre-knowledge assessment included six demographic questions requesting the nurses' age, race, and years as a nurse. An eLearning module followed that included content covered in the pre-knowledge assessment using PowerPoint slides and took nurses 15 minutes to complete. After completing the eLearning module, the nursing staff repeated the questions from the pre-knowledge assessment and then applied the knowledge gained in two application-based case studies, with four questions each. Case studies were utilized for the participants to apply

their knowledge in the context of a patient scenario. Completing the eLearning modules was scheduled for all staff nurses on the IPS unit for one month, from May 1, 2022, to May 31, 2022.

Following the knowledge assessments, chart audits were conducted on charts from patients admitted to the IPS unit following the Nuss Procedure from June 1, 2022, to August 31, 2022, to assess staff nurses' utilization of the standardized clinical care pathway on patients who underwent the Nuss Procedure. Data collected during chart audits included patients' length of hospital stay, incentive spirometry use, ambulation, diet, hygiene, and nursing utilization of the patient intervention checklist to prepare for discharge.

Data Collection

Data collection occurred at two points: pre-module completion and post-module completion. Patients who underwent the Nuss procedure in 2021 served as baseline data for establishing the length of stay before the implementation of the education. Nurses' demographic information was only obtained within the pre-module questions. The pre-module knowledge assessment with demographic information, eLearning module, and post-module knowledge assessment, including case study questions, was completed within the eLearning platform at the pediatric facility. All pre- and post-module results were collected simultaneously. Following completion of the eLearning module with pre-and post-tests, chart audits were completed to track staff nurses' adherence to the pathway, along with the length of stay for Nuss Procedure patients between June 1, 2022, and August 31, 2022. Data collected for analysis were stored in the eLearning platform and were accessible by this author. Data was securely exported to Microsoft Excel and SPSS. All data were reported in aggregate.

Outcome Measures and Analysis

For this evidence-based practice project, primary data collected included demographic data from nursing staff on the IPS unit, along with data from a pre-and post-intervention knowledge assessment within an eLearning module and two case studies. Nurses charting standards related to the pathway (diet, incentive spirometry use, hygiene, ambulation, and education protocol charting), and length of stay, were collected and monitored over a three-month period. Proxy data to be collected was specifically related to the Nuss Procedure patients. Length of stay was the primary outcome collected from patient charts.

Version 28 of the Statistical Package for Social Sciences (SPSS) software was used for the statistical analysis. Descriptive statistics were used to determine the mean and standard deviation for nurses' age, years of experience, gender, race, ethnicity, and nursing degree held. A two-tailed paired sample t-test was used to determine the differences between the mean scores for the pre-and post-intervention knowledge assessment. The frequency of staff nurses' charting for how often each patient sat in the chair following surgery, ambulated following surgery, what diet the patient tolerated, incentive spirometry use, and showers/linen changes indicated nurses' compliance using the SCCP checklist. A Kruskal-Wallis Test was conducted to determine the difference in average length of stay from 2020 to 2022.

Ethical Considerations

Determination from the University of Tennessee Institutional Review Board (IRB) and the IRB at the project facility was sought prior to the implementation of this evidence-based practice project. Evidence-based practice improvement projects are typically not determined to be human subject research based on federal protection regulations; however, as accessing personal health information or personally identifiable information and future dissemination of

findings was planned, IRB determination was requested in accordance with best practice. This initiative was determined to not meet the definition of research and thus did not require IRB review. Project site approval was obtained prior to implementation.

Results

Participant Demographics

The nursing staff initially answered six demographic questions before completing the knowledge assessment. The mean age of participants was 31.31 years (*SD* = 6.85). Of the nurses participating, 93% identified as female, White, and not Hispanic or Latino. The mean years of nursing experience was 7.15 (*SD* = 5.56). Three nurses had an associate degree, 10 had a bachelor's degree, and one had a master's degree.

Knowledge Assessment

Fourteen nursing staff completed the initial pre-and-post knowledge assessments indicating a 44% participation rate. There was a statistically significant difference between the pre-and post-intervention learning assessments after completing the eLearning module. Scores on the pre-knowledge assessment were *(M* = 9.07, *SD* = 1.27) and ranged from a score of 7 to 11 out of a possible score of 11. Scores on the post-knowledge assessment were (*M* =10.71, *SD* = 0.47) and ranged from 10 to 11. A paired sample t-test indicated a statistically significant difference between pre-and post-knowledge assessment scores ($p = .001$).

Assessment of Charting on Outcome Measures

Chart audits assessed nursing staff adherence to charting from the SCCP checklist over the three-day period. Nurses charted the patient diet 100% of the time, patient shower/bath hygiene 20-100% of the time, and patient linen/clothing hygiene 0-100% of the time. Ambulation and incentive spirometry use were charted 0% of the time. Diet and hygiene charting

interventions are pre-populated in the patient's electronic health record (EHR), and ambulation and incentive spirometry use must be manually added. These findings suggest that nurses were more compliant with charting items from the checklist that were pre-populated into the patient chart. However, there was a considerable amount of missing data in the patient's chart as well as the paper copies of the bedside checklist were not scanned into the EHR.

Length of Stay

There was a statistically significant difference between the use of cryotherapy for pain management and the length of hospital stay following the Nuss Procedure. Length of stay decreased from a mean of 4.28 (*SD* = 0.49) days in 2020 to 2 (*SD*= 0.0) days in both 2021 and 2022 following the implementation of cryotherapy in 2021. This 2.28-day decrease in length of stay was a statistically significant difference in length of stay after beginning cryotherapy (p = .001).

Discussion

Implementation of an SCCP was successful in the reduction of length of stay for patients who underwent the Nuss Procedure at one pediatric medical center. The decrease in length of stay following the implementation of the SCCP, along with nurses' improvement in score from the pre-knowledge assessment to the post-knowledge assessment, were statistically significant. The number of patients who undergo surgical correction of PE fluctuates yearly at this pediatric facility. Prior to implementation, there was no standard of care for Nuss Procedure patients. Although implementing an SCCP is associated with undeterminable costs, the use of an SCCP has been shown to improve patient outcomes (Gurria et al., 2020; Mangat et al., 2020; Rotter et al., 2010). There was no associated cost for the completion of this evidence-based practice project. However, the creation of educational modules and distribution is a paid role. Uploading

the eLearning module to the eLearning platform and collecting results is associated with a paid role at the facility. Completing the eLearning module can be considered a non-productive time away for nurses away from patient care, indirectly affecting costs. The cost to create and implement the SCCP and educate staff nurses on the components of the SCCP may be offset due to the significantly decreased length of stay, which points to decreased patient charges (Gurria et al., 2020). A cost-benefit analysis of the SCCP could be beneficial to include in future studies (Holmes et al., 2019).

There were several barriers to this evidence-based practice project. The inpatient surgery unit at the pediatric facility switched floors to a unit with a higher number of beds, and there was a large amount of staff turnover during the project implementation and chart audits. Nurses expressed increased burnout, and the patient population on the unit changed to include a wider variety of patient diagnoses. Nurses had to complete the pre-knowledge assessment and post-knowledge assessment in one sitting, which means that retention of knowledge is unknown. Upon auditing patient charts, staff nurses were noted to adhere to charting interventions that were pre-populated into the chart – diet and hygiene. There was little to no adherence to charting interventions that did not pre-populate into the chart – up to chair/ambulation and incentive spirometry use. A final barrier to note is that all discharge checklists were on paper, and each paper got misplaced at patient discharge.

This evidence-based practice project highlighted potential areas for further examination. An update of the intervention bundle, or a more specified intervention bundle for PE patients, could be created to increase charting compliance. Charting interventions related to the SCCP, such as ambulation, incentive spirometry use, diet, hygiene, and education, should be pre-populated in the EHR. The patient discharge checklist should be converted from paper to an

electronic version within the electronic charting system to increase compliance and mitigate barriers. Hands-on education and simulation of skills could be beneficial in addition to an eLearning module to increase knowledge assessment scores and comprehension of the SCCP. A further examination of barriers to nursing compliance related to charting in the EHR and carrying out patient care aspects of the SCCP is pertinent for future improvement.

Implications for Practice

Implementation of a standardized clinical care pathway for patients who undergo the Nuss Procedure and the education of staff nurses at this pediatric medical center was important for providers, patients, families, and the community. The length of hospital stay was significantly decreased following the implementation of the cryotherapy pain management treatment from the SCCP. A decrease in length of stay suggests a likely decrease in post-operative pain scores during hospital admission since pain is one of the common reasons for extended hospitalization (Gurria et al., 2020). Considering that PE is the most common chest wall anomaly, there will continue to be patients that require the Nuss Procedure for surgical correction. Continued education and growth of knowledge about this patient population could be invaluable to their standard of care and quality of life following surgery.

Limitations

Strengths of this project included the low cost of creating the SCCP and implementing nursing education, the collaboration of the multidisciplinary team to create the SCCP, and a decrease in the length of stay following the implementation of the cryotherapy feature of the SCCP. However, a primary limitation is the small sample size of nursing participants and patients receiving the Nuss procedure at this pediatric facility. Another limitation includes the restriction of the learning management system, where all aspects of the eLearning module had to

be completed at one time. This resulted in the inability to complete the pre-knowledge assessment, educational module, and post-knowledge assessment at different time points to determine the retention of knowledge.

Conclusion

Pectus excavatum is the most common chest wall deformity (Gurria et al., 2020). The evidence provided supports the implementation of an SCCP for patients who undergo the Nuss Procedure to decrease the length of stay. In addition to decreased length of stay, implementation of a standardized clinical care pathway has been shown to improve pain control, decrease postoperative complications, and decrease the rate of hospital readmissions (Rotter et al., 2010). Furthermore, study findings recommend the importance of educating staff nurses on aspects of the SCCP, along with interventions pertinent to the care of PE patients (Gurria et al., 2020). A computer-based, pre-intervention knowledge assessment followed by an eLearning module and post-intervention knowledge assessment has been shown to be effective in fulfilling this educational aspect of the pathway. The barriers to this evidence-based practice project leave room for a future project, which can improve the sustainability of nursing knowledge and skill acquisition for using a standardized clinical care pathway

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