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A Clinical Pathway Education Program for Pediatric Nurses

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Walden University

College of Health Sciences

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Lisa Scheiber-Case

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Walden University
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Abstract

A Clinical Pathway Education Program for Pediatric Nurses

by

Lisa Scheiber-Case

Proposal Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August, 2015

Abstract

Clinical pathways have been studied to promote best practices in nursing and enhance patient satisfaction. For 10 years a pediatric orthopedic surgical team at a Midwest hospital has not had a clinical pathway to treat or standardize care for adolescents following posterior spinal fusion surgery. Pain scores and patients' length of stay were collected using a retrospective chart review. This information was used to revise preoperative education materials and develop a visual poster. The purpose of this project was to identify and develop a way to educate the pediatric nursing staff on the use of the developed educational materials, poster, and clinical pathway prior to its implementation. David A. Kolb's learning cycle and the experiential learning model was used as the theoretical foundation of this study. The quality improvement project for the nurses will be developed using a *flipped classroom* approach as the learning environment. Videos, scenarios, and small group activities will be created and used in an interactive learning environment. The study will use a pretest-posttest design of retrospective chart review data with the independent variable being the education provided to the nurses. Social implications related to this project are to provide information on the plan of care following surgery to the adolescent and caregiver. This project will promote positive social change for adolescents and caregivers who will be engaged in the postoperative care to increase their satisfaction and decrease their anxiety.

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by

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MS, Walden University, 2011

BS, Walden University, 2009

Proposal Submitted in Partial Fulfillment
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Dedication

This is dedicated to my past and future pediatric patients. I have a sincere passion for providing them and their families with the best possible nursing care. May this quality improvement project enhance the care of many adolescent patients, and promote future improvements to nursing education.

Acknowledgments

Thank you to my family for their continued support through my personal and professional journey. Without the love and support from my parents, husband, and children I would not have accomplished my goals. I am forever grateful to you all.

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Section 1: A Clinical Pathway Education Program for Pediatric Nurses

Introduction

A large academic medical center in the Midwest performed approximately 40 posterior spinal fusions on adolescents in the past three years with a diagnosis of idiopathic scoliosis: a lateral curvature in the spine. These pediatric patients were treated surgically with posterior instrumentation and fusion of the spine with an average hospital stay of 6-9 days. The surgical pediatric orthopedic practice has increased by 50% in the past year within this institution. There were variations in practice among the surgeons, which made it difficult for pediatric nursing staff to care for these patients postoperatively. Pediatric nurses are to expect an increase in volume of these patients; therefore standardization of practice needs to occur to promote best practice and positive outcomes (Rotter et al., 2010).

Clinical pathways are used as a guideline that includes best practice of a specific diagnosis in a format that a multidisciplinary team can follow to promote positive outcomes (Jabbour et al., 2013). The pediatric orthopedic surgical team consisting of surgeons and nurse practitioners developed a postoperative clinical pathway for adolescents with a diagnosis of idiopathic scoliosis following a posterior spinal fusion. The clinical pathway focused on postoperative cares related to pain management, activity and mobility, diet advancement and bowel management during the anticipated five-day hospital stay following the surgery.

Pediatric inpatient nursing leadership was informed about the change in practice for these patients. Staff nurse education is a key factor in successful implementation of

clinical pathways, however best strategies for implementing clinical pathways have not been identified (Jabbour et al., 2013). Nurse educators need to find innovative ways to present information to staff for learning, and to promote retention of the education. This will result in positive outcomes, which may include a decreased length of stay and an increase in patient satisfaction for these adolescents and their caregivers.

Background

Van Herck et al. (2010) stated orthopedics is a common area to see clinical pathways utilized with a goal to enhance cost-effective, quality care. In 1999 this Midwest medical center initiated a postoperative clinical pathway for posterior spinal fusion adolescents to assist nursing staff and physical therapists with the postoperative plan of care for these patients. A paper copy of the pathway was placed on the front of the patient's paper medical record, which was placed outside the patient's room for members of the health care team to review. The intent was to have available a guide and plan for each hospital day for these patients during the postoperative phase in regards to pain management, mobility, diet and bowel care. This was a valuable, at-a-glance document to enhance communication and assist the health care team to identify the care plan for the day for this patient. Chu (2014) developed a clinical pathway in an emergency department for renal patients and found it enhanced communication among the renal department and ED clinicians, which resulted in a decreased delay in treatment and better patient outcomes.

In 2004, this medical center in the Midwest implemented the electronic medical record (EMR), and with this transition the paper copy of the clinical pathway has not

been utilized for adolescents who have received a posterior spinal fusion for a diagnosis of idiopathic scoliosis. This has resulted in a breakdown in communication between the multidisciplinary team caring for these patients, and occasionally led to an increased length of stay. Lack of consistency of ordered cares among the pediatric orthopedic surgeons made it difficult for the staff nurses, physical therapists, and dieticians to care for these patients postoperatively. The orthopedic surgical team rewrote the clinical pathway to include practice changes as a result of their evidence-based practice research related to pain management, mobility, diet advancement, and bowel management in the postoperative phase following a posterior spinal fusion in adolescents with a diagnosis of idiopathic scoliosis. A plan is needed for inpatient pediatric staff nursing education to be completed prior to the implementation of the pathway for these patients.

Problem Statement

The pediatric orthopedic surgery group identified a need to revise and reintroduce the postoperative clinical pathway into practice for the postoperative adolescent posterior spinal fusion patients with a diagnosis of idiopathic scoliosis to determine cost-effective, best practice in an effort to provide standardized care for these patients. A program for education of the clinical pathway will need to be developed to communicate practice changes to the pediatric staff nurses caring for these patients. Rotter et al. (2010) reviewed 27 studies on clinical pathways, but found little detail on how the clinical pathways were implemented. They reported new studies should clearly document the implementation process that is used.

Purpose Statement

The purpose of this quality improvement project is to develop an education program using case studies and a flipped classroom approach to deliver the content to pediatric staff nurses in a hospital general care setting prior to the implementation of a post-operative clinical pathway for adolescents following a posterior spinal fusion.

Project Objectives

Quality improvement project objectives are:

1. Developing an education program for pediatric staff nurses in a hospital general care setting on the use of the clinical pathway for the postoperative care of adolescents receiving a posterior spinal fusion for adolescents with a diagnosis of idiopathic scoliosis prior to implementation.
2. Providing all pediatric staff nurses with education on the use of the clinical pathway through the use of the case study method performed in an interactive learning environment.
3. Evaluating the use of the clinical pathway by using prospective chart reviews related to length of stay and staff nurse documentation, which will be performed three months following the implementation of the pathway.

Project Questions

1. Does nursing education performed in an interactive nursing environment result in compliance in the utilization of the clinical pathway based on the documentation of pain scores measured by patient chart reviews?
2. Does implementation of the postoperative clinical pathway for adolescents

following a posterior spinal fusion for idiopathic scoliosis decrease patient's length of stay in the hospital?

Conceptual Model and Framework

Kolb's experiential learning theory will be used to assess adult learning styles, and develop a framework for teaching the clinical pathway to hospital staff nurses. Kolb's focus on learning style evaluates the nurse's most favorable method of learning such as watching, thinking, feeling, and doing. Turesky and Gallagher (2011) describe four modes of the learning cycle, which include concrete, reflective, abstract and active learning. Concrete learning happens through feeling the experience of the activity, reflective learning happens through observation, abstract learning occurs while thinking, and active learning is experienced through doing. They go on to discuss Kolb's four learning styles as accommodators, divergers, convergers, and assimilators. Accommodators learn by active experiments and are concrete thinkers. Divergers prefer learning in an imaginative and creative environment. Convergers like to receive abstract information before actively performing the task. Assimilators are systematic learners and prefer to receive education in a logical form. The nurse may be more comfortable using one learning style or receiving education one way, but it is important to include a variation of these learning styles to retain information and be successful learners.

Kolb's theory states experiences must be transformed for learning to occur; therefore one must assess, plan, intervene, and evaluate a situation in order for learning to occur (Lisko & O'Dell, 2010). This type of learning is interactive learning with a hands-on approach to facilitate critical thinking. The use of interactive learning within this

project will provide nurses with different learning styles to benefit from the education.

The education will incorporate activities that include: listening, reading, seeing and doing. This will include listening to the direction in the classroom, reading the scenarios, seeing the clinical pathway on the computer, determining cares to implement, and documenting the postoperative cares.

Evidence-Based Significance of the Project

When developing the clinical pathway the pediatric orthopedic surgical team focused the literature review specifically on pain control, activity/mobility, and diet. The evidence was used to standardize practice for this group of patients, and a plan for nursing education will be developed. This project does not relate to the development of the clinical pathway related to evidence-based practice found by the orthopedic surgical team, but rather the education for staff nurses to successfully incorporate the pathway into the patient's plan of care. The orthopedic surgery team of surgeons and NP's completed the research on best practice and development of the clinical pathway.

Current literature was reviewed to identify an education model to present the implementation of the clinical pathway to pediatric staff nurses. Stanley and Dougherty (2010) stated there is a paradigm shift in nursing education to include both curriculum and pedagogical learning. This is driven by changes in healthcare due to evidence-based practice and technology. Scott, Grimshaw, Klassen, Nettel-Aguirre, and Johnson (2011) described there is not a universal method for educating staff on the use of clinical pathways as they are modified to fit the institution. They experienced that health care organizations agree there is a need to prioritize and standardize the implementation of

clinical pathways. Hsu, Lee, and Barker (2013) established a pediatric asthma clinical pathway, but noted the pediatric emergency room physician did not always utilize the pathway. This could be related to time or education, and the group noted this resulted in several admissions to the hospital that could have been prevented. Education and buy-in of the clinical pathway by stakeholders is key in its implementation and success.

Definitions of Terms

The definition of terms in this project include:

Adolescent - The definition of an adolescent can vary, but for the purpose of this paper it was defined as ages 13-18.

Certified Child Life Specialist – Child Life Specialists have earned a minimum bachelor's or master's degree, with an educational emphasis on human growth and development, education, psychology, or a related field of study, and provide emotional support to patients and families. There are several Certified Child Life Specialists that work with the pediatric population within the organization.

Clinical Pathway – A standardized map for patients with a particular diagnosis that is based on research, literature, and practice that is used to guide their care to promote positive outcomes.

CNS - Clinical Nurse Specialists are advanced practice nurses who have earned a master's or doctoral degree in a specialized area of nursing practice. There is one that represents the general pediatric care unit and one that represents the PICU.

Evidence-Based Practice – The implementation of current research when making decisions about health care in order to promote better outcomes.

Flipped Classroom - A form of teaching where new content is learned in class using videos and small group discussions instead of lecturing to provide more personalized guidance and interaction with students.

Idiopathic Scoliosis - The most common type of adolescent scoliosis characterized by a lateral curvature of the spine.

Interactive Learning- Interactive learning is a pedagogical approach to learning that is a hands-on, learner-centered approach encouraging critical thinking and problem-solving skills.

Multidisciplinary Team - The multidisciplinary team defined all members caring for the adolescent through the postoperative stage. This included pediatric orthopedic surgeons, pediatric orthopedic surgery NP's, both CNS's, the pediatric general care floor staff nurse, a dietician, and a physical therapist.

NES – Nurse Education Specialist's are responsible for planning, implementing and evaluating educational activities for nursing staff to improve the knowledge and skills needed to provide patient care.

NP – Nurse Practitioners are advanced practice nurses who have earned a master's or doctoral degree that are able to manage and deliver care within their specialty of practice. The four nurse practitioners are pediatric nurse practitioners that work with each of the four pediatric orthopedic surgeons.

PICU – Pediatric Intensive Care Units specialize in caring for critically ill infants, children, and adolescents within a hospital setting.

Assumptions and Limitations

Barriers and challenges may present themselves while developing this quality improvement project. Limitations may include lack of documentation by pediatric nursing staff caring for the patient post-operatively during the retrospective chart review. If there is lack of documentation of pain assessments, activity, and diet advancement by nursing staff, one must assume the tasks were never completed. This may limit the findings as there will be no way of determining if the pediatric staff nurses needed education related to post-operative nursing cares of an idiopathic scoliosis patient status post a posterior spinal fusion, or if there was a reason for the lack of documentation. There will be inability to identify if the tasks were not performed, or if they were performed and documentation was just not completed. Assumptions may include the lack of nursing care being performed related to the documentation. One may also assume the cares have been done, but just not charted. The goal will be to identify if or what barriers may be present in preventing the nurse from providing and/or documenting post-operative cares.

Significance/Relevance to Practice

The pediatric orthopedic surgical group in this institution in the Midwest includes four surgeons and four nurse practitioners. This team collected data on 40 adolescent patients who underwent posterior spinal fusions with a diagnosis of idiopathic scoliosis over the last three years. After further review of the patient data it was determined the length of stay for these patients was 6-9 days, with a large variety of orders related to pain management, activity restrictions, diet advancement and bowel care. Scoliosis

Research Society (SRS) (2013) notes that the average number of days in the hospital for a patient with idiopathic scoliosis who underwent a posterior spinal fusion is 4-10, however the University of California San Francisco (2013) found the average is four days, but can vary from 3-7 days. Sinai Hospital (2013) reported patients require a 3-5 day hospital stay. Decreasing the length of hospital stay will decrease health care costs, have a positive effect on patient and family satisfaction, and place the organization in competition with the other institutions listed above. With the development of the clinical pathway based on the orthopedic surgery team's best practice literature findings, cares such as pain management, activity/mobility, diet and bowel management will be identified and provided by all team members involved in the adolescent's postoperative care. Education for staff nurses is key in the implementation and utilization of the pathway in clinical practice (Jabbour et al., 2013).

Adolescents at this medical center were all on bed rest while in the Pediatric Intensive Care Unit (PICU) the first postoperative night, and did not transfer to the general pediatric unit until late afternoon the following day. Shan et al. (2013) found through their comparison that adolescents not spending the first postoperative night in the PICU following a posterior fusion for idiopathic scoliosis had a decreased hospital stay, decreased intravenous narcotic use, fewer blood tests, and fewer physical therapy sessions. University of Washington Orthopedics and Sports Medicine (2013) recommends these patients should be dangling on the edge of the bed on post-operative day one, and their average length of stay was 4-5 days. The updated electronic clinical pathway that was developed by the pediatric orthopedic surgical team states these

adolescents will remain in the PICU the first postoperative night, but will dangle on the edge of the bed. This change in practice is not significant enough to have the entire group of PICU staff nurses complete the clinical pathway education; therefore only the general care pediatric nurses will be provided this formal education regarding the clinical pathway. The Nurse Education Specialist (NES) in the PICU will determine the education for these nurses.

Implications for Social Change in Practice

Providing education to the patient and family members involved preoperatively may decrease the length of stay, and promote satisfaction. The clinical pathway provides not only a pathway for the multidisciplinary team to follow, but also the patient and their family members. The orthopedic NP shared the clinical pathway with the patient and their family during the preoperative clinic appointment. Identifying the patient and families role in the postoperative phase may decrease stress caused by the unknown. In order for pediatric nursing staff to provide the best care to these patients they will need education on the preoperative information the patients are given, along with their expectations in the inpatient setting.

The care of a hospitalized adolescent patient may involve multiple members of a family unit. Commodari (2010) found there can be stress and increased anxiety on all family members involved even with a short, planned hospital stay. Many times extended family members such as grandparents may be asked to stay with the hospitalized adolescent or assist with outside family duties. An adolescent in the hospital who has undergone a posterior spinal fusion will require assistance from a family member when

they return home. It is important that caregivers be present in the postoperative phase to be educated on how they can assist with these cares. Resources should be identified, and plans made in the preoperative stage to eliminate further stress and anxiety on the family unit.

Employers of the parents, and possibly the adolescent's employer, need to be notified of the plan for surgery and the post-operative cares and restrictions that will follow. Financial burden may also play a role due to missed work related to the hospitalization and recovery process. Arrangements with employers should be made prior to the patient's surgery. An increased length of stay affects the entire family unit. The use of the clinical pathway can assist social change with both families and employers to plan for the recovery phase by having a more definitive post-operative plan and possibly decrease the length of stay. This will result in better communication to employers and all family members on the post-operative phase.

The adolescent may feel socially isolated from peers during their hospital stay followed by several days after returning home due to their activity restrictions. Mayo Clinic Child Life Specialists have identified this issue with this inpatient population, and offered iPads and desktop computers for adolescents to stay in contact with their peers through social media. Lucile Packard Children's Hospital (2012) found decreased stress levels with the use of iPads for distraction in the emergency department with pediatric patients.

Summary

A pediatric orthopedic surgical team identified the need for a clinical pathway for

the postoperative care of the adolescent diagnosed with idiopathic scoliosis following a posterior spinal fusion. Collaboration of the multidisciplinary team members played an important role in the postoperative care of these patients. Evidence-based literature was reviewed to determine best practice of these patients. Now that best practice was determined and a pathway was developed, advanced practice nursing staff began to look at the education process for the pediatric nursing staff.

Section 2: Review of Literature and Theoretical and Conceptual Framework

Introduction

The review of evidence-based practice allowed the researcher to compare and contrast current education initiatives. Literature was reviewed specifically related to generalized aspects of nursing education. Literature was also reviewed related to nursing education and patient clinical pathways. An advanced search of peer-reviewed articles will be obtained from the Walden Library and the Mayo Clinic Library from the years 2008-2014. Search engines used were CINAHL, EBSCO, and ProQuest. Key search terms included: clinical pathway, care pathway, integrated care pathway, nurse education, nursing education, and education implementation. A general literature review will be completed to review approaches to staff education related to clinical pathway implementation, along with barriers and the development and education of clinical pathways. A specific literature review will be obtained to observe specific methods used to educate professional nursing staff.

General Literature

A general literature review was completed to look at specifically the use of clinical pathways and how they were implemented within other institutions. The use of clinical pathways for children and adolescents are growing in popularity, and may have to do with the increase in co-morbidities within this population. Clinical pathway implementation for both adults, and children and adolescents will be reviewed.

Education of Clinical Pathways

Children's Hospital and Health Center in San Diego, California implemented

clinical pathway education for physicians (Seid, Stucky, Richardson, & Kurtin, 1999). After identifying topics for clinical pathways, three stages were identified in an approach to teach the pathways. They included: learning pathways, implementing pathways, and educating other residents on the use of the pathways. Specific details related to the education of the pathways were not discussed, other than the clinical pathways were presented at noon conferences and/or grand rounds. Seid et al. recommend pathways be evaluated at least every six months, and that they have been found to decrease costs and improve patient care. They also found it beneficial to use a developmental framework when educating other physicians on the use of the pathways.

Gurzik and Kesten (2010) addressed the role of the Clinical Nurse Specialist (CNS) in promoting the use of clinical pathways based on evidence-based practice (EBP). The CNS has specialty training in a particular area and is qualified to use nursing theory and EBP to promote best outcomes; bridging the gap between practice, research, and education. Therefore, it is important to have a CNS be part of the development, education, implementation, and evaluation of clinical pathways.

Clinical Pathway Barriers

Barriers to implementing clinical pathways will be studied. Gurzik and Kesten (2010) found barriers to clinical pathways include resistance to change in practice, and lack of individualization of cares. Their solution was to include providers in the development of the pathways. Evans-Lacko, Jarrett, McCrone, and Thornicroft (2010) also summarized barriers to implementing evidence-based clinical pathways. They found there were variations in the way pathways were implemented, and that it is important for

key stakeholders to be involved for implementation to be successful. They recommend all clinicians need to be engaged and have buy-in, which focused on a multifaceted approach. These characteristics included: innovation techniques, characteristics of staff implementing the pathway, how the change is communicated and presented, structural and cultural considerations of the organization, external influences, and the organization's view of change. Evans-Lacko et al. (2010) conclude, "Successful implementation of care pathways is dependent on the development process. A lack of understanding about their role and use by any staff group will doom them failure" (p. 4).

Development and Education of Pathways

Literature related to both developing and implementing clinical pathways was a common theme. Chea (2000) describe a qualitative study of the development and implementation of a clinical pathway in patients with a myocardial infarction in a hospital in Singapore. After designing the pathway, a plan for education was presented. Staff members were given written education material, followed by a six-hour training course using case studies and scenarios to help them become familiar with the flow of the pathway. Refresher courses were offered, but the timing of these was not specified. Chea found knowledge, attitude, and implementation by key stakeholders was a barrier to the success of the clinical pathway. Chea notes more research and publication of results is needed in determining which methods are successful in developing and implementing clinical pathways.

Specific Literature

The literature explains several ways of providing education to nursing students

and staff nurses. Methods included workshops, simulation, online learning modules, case methods, focus groups, and flipping the classroom. Some methods proved to be better choices than others, and the method chosen was dependent on the topic for education.

Education Workshops

Tarnow, Gambino, and Ford (2013) conducted a 1.5 day workshop to present education to staff nurses, which focused on safe, efficient patient care in an effort to improve critical thinking skills through case study reviews. A questionnaire was emailed to participants six months after the workshop to determine if the education learned was being implemented. Only 20% of staff returned the questionnaires, but interviews with the staff were also performed to obtain data. They concluded that more follow-up on the unit was needed after implementing the education. Identifying coaches or mentors was thought to be a beneficial way of encouraging the implementation following the formal education.

Simulation Center

Simulation is another teaching strategy for nursing staff. Bricker and Pardee (2011) describe that simulation can be used "...to practice clinical decision-making in a safe environment without harm to an actual patient" (p. 34). A group of nurses were chosen to lead several 30-minute simulation scenarios throughout the day. Time was allotted for debriefing following each scenario to allow for questions and to share insights. Surveys were given to all participants at the end of the day. Staff nurses reported increased confidence, but it is difficult to assess whether the education received through simulation changes patient outcomes. Further evaluation is needed.

E-learning Modules

Individual online learning modules, known as e-learning, are used to educate staff nurses on practice changes, as well as test nursing competency. Heartfield et al. (2013) used e-learning for yearly competencies for nursing staff using interactive modules to support best practice followed by automated feedback. Positive feedback included convenience, but a common theme was the difficulty accessing computers, along with computer issues with hardware and software. Dissatisfaction was found to be a factor with staff nurses who lacked computer experience; therefore it took them longer to complete the competencies. Beavis, Morgan, and Pickering (2012) used online education modules to test mandatory staff nurse competency in a dialysis unit. They used a bank of 100 questions, which were grouped into categories depending on the area of the group being tested. Staff feedback was positive, but many were anxious about taking the exam online. The initial development of the questions was time consuming for the nurse educators, but proved to decrease their workload over time.

Case Studies

Case studies or case methods are another way to provide nursing education. A case study provides nurses a learning environment to share knowledge, problem-solve, prioritize, and improve critical thinking skills (Forsgren, Christensen, & Hedemalm, 2013). This research placed 100 second-year nursing students in small groups to implement didactic learning into problem solving in a clinical setting. Course evaluations found the dialogue during the case study groups allowed time for reflection while gaining knowledge and promoting critical thinking. The students expressed some confusion

regarding the expectations of the case studies; therefore clear instructions and objectives should be communicated. Charge nurses play a pivotal role in the overall management of the unit, and strong communication skills are a key component in this role. Homer and Ryan (2013) developed a charge nurse workshop, utilizing focus groups within an interactive learning environment over a two-day period. This qualitative study identified competencies needed to be an effective charge nurse, and a Charge Nurse Education Program (CNEP) was developed. A case study approach was used within the focus groups to promote self-awareness of communication styles and emotional intelligence. Sixty charge nurses participated and the feedback via a Lickert scale was very positive.

Flipping the Classroom

Flipping of a classroom is discussed in recent literature. The focus of the flipped classroom is to provide the written and reading materials to participants prior to their time in the interactive learning lab (Missildine, Fountain, Summers, & Gosselin, 2013). Missildine et al. used classroom time for discussion, case studies, simulation, and interactive learning, while utilizing computers for classroom lectures in a baccalaureate nursing program adult health course. Students were engaged in the interactive learning, and were able to apply learned theory to the practice scenarios. Critz and Knight (2013) did the same with a graduate nursing program where students were asked to read and review online lectures prior to coming to class. They found students engaged in their own learning through the classroom discussions, and worked together to promote critical thinking. Critz and Knight (2013) found the flipped classroom to be successful as students were able to engage in learning at their own pace. This included working with

students, rather than lecturing to them, and the final evaluations from students were positive. Smith and McDonald (2013) brought the flipped classroom into professional development by using podcasts and videos. Advantages included bringing the content to the nurse's off-site or working varied shifts, quick distribution, and allows for repetitive access of education. Smith and McDonald developed tips for creating podcasts or videos, and found this strategy supports the adult learners value of their time.

Summary

After exploring several methods of nursing education the flipping of the classroom incorporating case studies is chosen to educate pediatric staff nurses on the clinical pathway of the adolescent following a posterior spinal fusion in relation to Kolb's theory. The flipped classroom model promotes reviewing all materials prior to attending the interactive learning lab, and utilizes class time to promote critical thinking and actual use of the clinical pathway. It was felt that this model of education would be most beneficial in providing best practice to this particular group of patients.

Section 3: Methodology

Introduction

Project design specifies a step-by-step progress of the specific elements of the intervention (Burns & Grove, 2009). Knowledge was gained from the literature regarding the best way to educate pediatric staff nurses prior to implementation of the clinical pathway for adolescents with idiopathic scoliosis following a posterior spinal fusion. This project was a method to increase knowledge as a foundation to change behavior by using active learning education (Hodges & Videto, 2011).

Project Design/Methods

The project used a pretest-posttest design to investigate the efforts of the nursing education on the use of a clinical pathway used in the care of adolescents who undergo a posterior spinal fusion. The independent variable was the interactive education provided to all pediatric nurses. The dependent variable was the response to the education, and was measured by retrospective chart reviews (See Appendix E). This design gave an overall effectiveness of the intervention by comparing two control groups: nursing documentation prior to and after implementation of the clinical pathway, along with length of stay.

The internal validity of this design was strong as the pre and posttest groups were equivalent, as the same pediatric nurse's documentation was compared. The retrospective chart review of 40 adolescent patients who underwent a posterior spinal fusion for a diagnosis of idiopathic scoliosis was used as a means of the pretest data. Posttest data was gathered three months after the implementation of the clinical pathway and was

compared to the information collected from the retrospective chart review (See Appendix E). This data included nursing documentation of all pharmacological pain interventions, and documentation of pain scores at least every four hours. Data was also collected on patient's length of stay. This data was collected via the electronic medical record (EMR). Burns and Grove (2009) stated there is no way to control the quality of the data collected via the EMR through a chart audit and this will weaken the design. A strategy to limit variability was to ensure all staff receive the same education with the same instructor related to documenting nursing interventions based on the clinical pathway prior to its implementation.

The purpose of this project was to identify and develop an interactive education program for pediatric nurses prior to the implementation of the posterior spinal fusion clinical pathway. The aim was to have nurses utilize this postoperative clinical pathway following their education by performing and documenting patient cares related to pain, mobility, diet and bowel management with the goal of providing improved patient outcomes that include; a decreased length of stay, documentation of pharmacological pain interventions, and documented pain scores at least every four hours. In the sections below, a step-by-step process of the development of the education plan is discussed including education committee, goals, objectives, plan, evaluation, and sustainability.

Background

A retrospective chart review was performed by the pediatric orthopedic surgery team who reviewed charts over the past three years of 40 adolescents who received a posterior spinal fusion for a diagnosis of idiopathic scoliosis at this Midwest institution.

The data gathered identified a variable length of stay of 6-9 days, and an inconsistency in documentation of nursing assessments and interventions related to pain. It may be assumed that lack of this documentation means that tasks were not being performed due to lack of nursing education in the care of these patients, or simply the lack of time to perform the cares and/or document the cares. These findings led to the need to develop a consistent plan of care based on current evidence-based practice with an aim to decrease length of stay for these patients and provide them with better pain management. This began with the pediatric orthopedic surgical team developing a clinical pathway for posterior spinal fusion idiopathic scoliosis patients.

A plan for education of the pediatric staff nurses on the use of the clinical pathway prior to implementation is needed. A needs assessment pretest was not thought to be beneficial as the retrospective chart review demonstrated a lack in pediatric staff nurse documentation related to pain assessment and management, which could conclude either the tasks were not being done or they were just not documented. Either way education needs to be completed to introduce the clinical pathway and the staff nurse expectation of their role as the care coordinator. The most current evidence-based literature was gathered and reviewed related to implementing staff nurse education of a clinical pathway (Chea, 2000).

Education Committee

The education committee was led by the Doctor of Nursing Practice (DNP) student, and includes NES's, CNS's, physical therapist, Certified Child Life Specialist, and two pediatric staff nurses. Jasper et al. (2010) found during their project design that

gaining buy-in was a key factor when it came to implementing their program; therefore all multidisciplinary team members were involved in program planning for education. The DNP student requested approval for paid time for clinical pathway education for pediatric staff nurses to be part of the Pediatric Professional Days that was held in the spring of 2014. Plans for agenda were considered for these professional development days, and approval was requested from the pediatric CNS, NES, and Nurse Manger for this clinical pathway education to be placed on the agenda.

The committee developed and planned the course agenda, which included: history of the project, goals and objectives, and education content for the learning experience. The education included the history of the need for developing the clinical pathway based on the retrospective chart data that will be shared with nursing staff to promote buy-in. The committee developed the educational content, which consisted of videos and case studies based on the use of the clinical pathway. All content was created and vetted by the NP's on the orthopedic surgical team and the pediatric CNS's. A member from IT was asked to assist with the set up of test patients. Room reservations with computers have already been established, as this will be added education to Pediatric Professional Days, which are already scheduled.

Education Goal

1. Educate nurses on the clinical pathway through the use of an interactive learning environment. Scenarios and case studies were completed following the clinical pathway education and participants will be required to successfully document interventions in the electronic medical record (EMR) such as: pain

scores at least every four hours, activity level, and diet and bowel management based on the examples.

Education Objectives

1. Explain the reasons for developing a clinical pathway for adolescent patients following a posterior spinal fusion surgery.
2. Demonstrate use of the clinical pathway by correct computer documentation of interventions on test patients related to the case studies. A printout from their session will be printed following completion of the documentation of the scenarios.

Education Plan

The recent practice of the use of case studies and flipping the classroom was the basis for the education program for pediatric staff nurses related to the postoperative clinical pathway of the adolescent following a posterior spinal fusion. This was a growing area of research at the graduate nursing level and professional nursing development; therefore was adopted for this project. Prior to attending the interactive learning course, emails were sent by the pediatric NES with an attachment of the posterior spinal fusion clinical pathway. The objectives and agenda for class (See Appendix A and B) were also emailed to staff. This way staff nurses had a chance to view the content prior to attending the classroom education. The focus of the flipped classroom was to provide the written and reading materials to staff prior to their class time in the interactive learning setting (Missildine, Fountain, Summers, & Gosselin, 2013). The pediatric CNS emailed all of these items two weeks before class, and it was explained to staff that these are the pre-

learning activities to complete so the time in the course will be used to develop clinical practice skills through interactive learning.

All pediatric staff nurses attended a 1.5-hour session in the interactive learning course. This education was presented to them after their review of the clinical pathway, which was emailed to them two weeks prior to class, but was also reviewed briefly in the classroom setting. Scenarios were presented as short videos to the group, and staff were allowed time for small and large group discussion. Smith and McDonald (2013) stated videos provide professional education development in nursing when prepared correctly. This includes providing short, single topic videos with a clear purpose and time for small group discussion. This will encourage sharing of previous experience, the ability to problem-solve as a group, and the opportunity to reflect on the lack of knowledge the individual nurse may have (Forsgren, Christensen, & Hedemalm, 2013).

Short, written case studies were given to the nursing staff to promote critical thinking in the use of the pathway (See Appendix C). Test patients were used with the case studies in the learning environment to practice documentation of nursing interventions related to the pathway. Computers were available to document interventions based on the case studies, and staff were allowed to work in groups. The groups were formed allowing a newly hired staff member to work with an experienced nurse. The results of their documentation were printed and reviewed with them prior to leaving the interactive learning course.

Promotion of Sustainability

Scenarios and case studies will be included in yearly pediatric staff nurse specific competencies to promote sustainability in the use of the clinical pathway. The clinical pathway content will also be added to the new staff orientation checklist for new staff nurses to review with their preceptor during orientation. This 1.5-hour interactive learning course will be offered twice a year, and will be included for new staff nurses during Pediatric Specialty Orientation days. These education efforts will promote sustainability and promotion of the use of this clinical pathway. The NP's on the surgical team will be owners of the pathway, and will review it yearly to implement updates related to best practice, as they deem appropriate.

Data Analysis

Data was collected using a retrospective chart review of adolescent patients with a diagnosis of idiopathic scoliosis that have received a posterior spinal fusion before and after implementation of the clinical pathway. A waiver of consent was requested from the IRB for the chart reviews. Data collected from the patient's electronic medical record (EMR) included patient's age, demographics, pain scores and length of stay. The data was entered into a computer and saved on an Excel spreadsheet. Variables included only data that is documented can be retrieved. If nurses fail to document interventions the data will not be reliable related to pain scores. The importance of documentation was stressed in the education. The *t*-test was used to analyze differences between the pre and posttest groups. Burns and Grove (2009) stated, "One of the most common parametric analyses used to test for significant differences between statistical measures of two samples is the *t*-test" (p. 502).

Project Evaluation Plan

The purpose of a project evaluation plan was to determine the effectiveness of the intervention, and the impact it may have on patient care (Kettner, Moroney, & Martin, 2013). This will be an ongoing process in an attempt to monitor and sustain the use of the clinical pathway. The pediatric orthopedic surgical team will review evidence-based practice and make changes, as they deem appropriate, to the content of the clinical pathway. The education to nurses will change as a result of these updates to the clinical pathway.

Evaluation of the Education Plan

The evaluation of the education methods needed to determine if the goals and objectives were met. Hamtini (2008) stated evaluation of education is a systematic approach to determine the value or success of a program. A model should be used for evaluating the methods used for nursing education. Kirkpatrick's model was used to evaluate this education program. Kirkpatrick has four levels beginning with reaction of the information, the learning process, individual behaviors, and results (Rajeev, Madan, & Jayarajan, 2009). Kirkpatrick and Kirkpatrick (2009) suggested the model be set up to work backwards from the results back to the desired behavior to change. They also have found the drivers of the program or project need to be present in level three (individual behaviors) to make this connection otherwise only about 15 percent of what is learned will actually be implemented. Kirkpatrick's model continues to grow and evolve within the field of education. Objectives for evaluation include:

1. Does the case study and flipped classroom method used in the interactive

learning course promote positive attitudes toward learned education and a willingness to apply what is learned?

2. Does nursing education performed in an interactive learning environment result in compliance in the use of the posterior spinal fusion clinical pathway as evidenced by documentation of pain scores, diet and bowel management, and ambulation?
3. Does interactive education for pediatric staff nurses followed by implementation of the postoperative clinical pathway for adolescents following a posterior spinal fusion decrease patient's length of stay in the hospital?

Staff completed paper evaluation forms immediately following the education to evaluate the course content. This determined Kirkpatrick's level one related to whether staff nurses liked the training, and if they plan to apply what they have learned. The Activity Evaluation Form (See Appendix D) determined if learning objectives were met, pediatric staff members accepted the education methods, and reported a willingness to incorporate into practice what they have learned. This was a means to measure the staff nurse's reaction to the education content, and to determine if the learning style conveyed the information successfully. Level two can also be incorporated into this evaluation form to identify what skills/knowledge were gained, and if attitudes have changed following education. Positive feedback on the evaluations would determine if these outcomes were met. Bias should be considered as the project is being done in a work place where nursing staff have direct reports and supervision.

Level three reviews the individual behavior that transfers to implementation. Prospective chart audits provided information to determine if participants changed their behavior based on what they learned. Ideal outcomes included documentation of pain scores every four hours, activity/mobility efforts, diet advancement and nutrition intake, and bowel management. Documenting of these interventions would be a positive outcome of this nursing education related to the clinical pathway. The clinical pathway promotes a hospital stay of 4-5 days for these adolescents, which is what the pediatric orthopedic surgical team at this Midwest institution has decided is standard best practice for their patients. Level four reviews the results that can occur following a change in behavior. The chart review will also determine length of stay for these patients. Evaluation metrics will be used to collect the Level three and Level four data (See Appendix E).

Summary

Clinical pathways are a growing practice in many areas of healthcare delivery; including the pediatric population. Developing and implementing these pathways is discussed at length in the literature; however more research is needed to determine best practice in educating nurses prior to implementing the pathways. This quality improvement project was an effort to standardize nursing care by providing pediatric staff nurse education on the use of a clinical pathway for adolescents following a posterior spinal fusion prior to implementation. The chart reviews identified barriers in providing the nursing cares and/or the documenting of these cares. The collaboration of key stakeholders in developing this education was key to its success. A multidisciplinary

team developed an interactive education course using a case study and a flipped classroom approach prior to implementing the clinical pathway into practice. This project may impact other pediatric medical and/or surgical areas to identify a need for developing clinical pathways to manage care, followed by formal education to nursing staff related to the updates in practice.

Section 4: Findings, Discussion, and Implications

Introduction

This project was supported by theory, and began with a plan for evaluation and sustainability (White & Dudley-Brown, 2012). Even when plans are carefully thought out prior to implementation, process errors and outcome shortfalls may still occur. It is important to discuss these findings, and the implications they may have on practice, to develop ways for future improvements. Currently this pediatric nursing education has not yet been implemented, so the findings, discussion, and implications will be hypothetical.

There were many changes made to the practice in caring for an adolescent postoperatively following a posterior spinal fusion. Preoperative education booklets will be rewritten to educate patients and their families about the postoperative plan of care. The physicians need to agree on a clinical pathway for this group of patients, and an order set needed to be written. Following this collaboration of the orthopedic surgery team, a large, laminated poster was created to place on the wall in the patient's room on postoperative day one as a visual for patients and families to know what is expected of them each day. This will allow the patient and caregivers to engage in the postoperative recovery phase. This was also thought to be a visual aid to communicate the progress that is expected each day following surgery to all members of the multidisciplinary team. It was very important for all items related to this practice change be completed prior to getting the pediatric nurses together for education. The plan is to still complete the education, however all of these items take time for approval within this large organization. Currently the preoperative education is complete, the posters are being

printed, and the orthopedic surgeons are meeting to discuss evidence-based practice to determine what will be included on the order set.

Summary of Findings

The questions for the project providing pediatric staff nurse education prior to the implementation of the adolescent posterior spinal fusion clinical pathway included:

1. Does nursing education performed in an interactive nursing environment result in compliance in the utilization of the clinical pathway based on the documentation of pain scores measured by patient chart reviews?
2. Does implementation of the postoperative clinical pathway for adolescents following a posterior spinal fusion for idiopathic scoliosis decrease the patient's length of stay in the hospital?

The summary of findings will evaluate whether these questions were answered. Chart reviews will determine if length of stay has decreased. Nursing documentation of interventions related to the use of the clinical pathway will also be reviewed, which will focus mainly on documentation of pain scores. These findings will determine if nursing documentation of pain scores have been completed. Results will be utilized to determine if the education and implementation of the pathway enhanced pediatric practice of these patients.

Discussion of Findings

Literature searches revealed many ways to implement education to staff nurses. Buy-in from providers to use and order the clinical pathway was the first step, and then

nurses need to be educated on the use of the pathway prior to implementation. Follow-up education will be needed following any formal education method; especially if it is not something the nurses will use on a regular basis. Time for debriefing and dialogue in groups was found to be beneficial in most methods of education (Bricker & Pardee, 2011, Critz & Knight, 2013, Missildine et al., 2013).

Education will be provided to pediatric nursing staff in an interactive learning environment. This will include statistics on inconsistencies in documentation of pain scores in hopes to enhance compliance with the utilization of the pathway followed by the need for proper documentation. Nurses need to understand the history behind the need for the clinical pathway to promote buy-in. Higgins and Hill (2012) stated one of the reasons for the neutropenic sepsis clinical pathway not being initiated was healthcare members were not sure if patient's met criteria when presented upon admission. All adolescents with a diagnosis of idiopathic scoliosis following a posterior spinal fusion will follow the clinical pathway and order set. The order set will include the pain regimen interventions, and will be similar for each patient. This will be addressed in the education, and practiced in the learning environment to promote proper documentation of pain assessments, interventions, and documentation.

Clinical pathways are initiated to mainstream care and decrease patient's length of stay. The clinical pathway composed by the pediatric orthopedic surgical team is a way to standardize care of the postoperative posterior spinal fusion adolescent. Van Herck et al. (2010) stated orthopedics is a common area to see clinical pathways utilized with a goal to enhance cost-effective, quality care. Clinical pathways have been proven to decrease

treatment time and improve patient satisfaction. The use of clinical pathways is spreading to the pediatric population. Ki Hyuk et al. (2013) developed a clinical pathway for pediatric patients undergoing treatment of a fractured humerus and found the efficiency of the pathway to decrease total hospital costs along with the length of stay. Research shows clinical pathways can decrease length of stay.

The findings will be related to two things: the clinical pathway and the nursing education. The clinical pathway will decrease the length of stay by standardizing the care for adolescents following a posterior spinal fusion. This standardization will promote the patients to follow through with certain cares each day to promote a dismissal on day five. The patient and caregivers will have a visual poster in the room that reviews these daily tasks related to the pathway, which will keep the patient on task for a dismissal on day five. The patient and caregivers will know what is expected each day to facilitate this planned dismissal. This will engage the patient and family in postoperative cares and result in an increase in satisfaction. The development of this clinical pathway for this postoperative group of adolescents may encourage other areas within this organization to look at standardizing care for other groups of pediatric patients.

The nursing education will be a key factor in the compliance on the use of the poster at the bedside in conjunction with the clinical pathway. If the nurse is not educated on the use of the pathway and does not follow through with the daily tasks, the patient may not be ready to dismiss on day five. If one nurse on days one through five does not follow the pathway there may be a delay in discharge. Each nurse must be educated on the importance of following the clinical pathway's daily recommendations. Length of

stay may be dependent on nurse's actions; therefore the education related to the clinical pathway will be crucial to the length of stay. The interactive education provided to the pediatric nursing staff will allow nurses an opportunity to review and practice using the clinical pathway. This form of education for staff nurses is a new concept and has been studied mostly in the student nurse population. Publishing the findings will be helpful to determine if this is a successful approach to staff nurse education.

Implications

Nursing education is a key factor in the use of the clinical pathway prior to its implementation. The implication of nursing education performed in an interactive nursing environment offers nurses a chance to learn, utilize and document scenarios related to the clinical pathway prior to its initiation into practice. Higgins and Hill (2012) stated one of the reasons for the neutropenic sepsis clinical pathway not being initiated was healthcare members did not have a good understanding of its use. With the interactive learning environment nurses will be educated and have time to ask questions prior to the introduction of the pathway into practice. Pediatric nurses will play a key role in performing the interventions on the clinical pathway to promote the goals of this project, one of which will be the nursing documentation of pain scores for this population.

Clinical pathways are tools that promote best clinical practice and management by a multidisciplinary team in a healthcare setting (Jabbour et al., 2013). A clinical pathway is a guide based on evidence-based best practice that providers may use to care for their patients. It is merely a guide, and may not pertain to all patients with the same diagnosis. The use of the clinical pathway can have implications on clinical practice such as a

decreased length of stay. Jiang, Cheng, Wang, Li, and Nie (2009) saw an increase in patient satisfaction and a decrease in length of stay with the use of their clinical pathway for surgical intervention of esophageal carcinoma.

The implication of social change for this project was considered as well. The preoperative education includes the use of the postoperative clinical pathway so adolescents know what is expected of them during the recovery phase. Normal growth and development of an adolescent was considered when writing and presenting this information to the adolescent. Engaging adolescents in their care will promote family-centered care as patient and caregiver roles are identified in the clinical pathway. Adolescents and their family members will have increased satisfaction with decreased length of stay as they will be able to have a plan, based on the clinical pathway, to return to work, school and home life. Freier, Oldhafer, Offner, Dorfman, and Kugler (2010) found an improvement in adolescent patient adherence of their renal transplant regimen when counseling and education were provided directly to the adolescent.

Project Strengths and Limitations

A strength of the project is that key stakeholders were involved from the beginning of the development of the project. This will allow pediatric advanced practice nurses and staff nurses to collaborate on when and how the clinical pathway education will be completed. Staff nurse education is a high priority within this institution, so leadership support was offered for education time to be paid. Paid time was also approved for advanced practice nurses who will spend time developing videos, poster, group discussions and scenarios. The multidisciplinary team of physicians, staff nurses, and

physical therapists identified a readiness to change, and agreed to a single clinical pathway as a guide for all posterior spinal fusion patients. Effective teamwork supports and enhances high-quality patient care (McComb & Hebdon, 2013).

Barriers and limitations may present themselves throughout this process.

Barriers may be finding computers for the interactive learning, and scheduling time for staff to attend. There is also a concern with nurses retaining the education, as care of these patients is not delivered on a daily basis. Another concern is how often the class should be offered after the initial mandatory sessions. The nursing education is a priority, but finding the balance of when to offer this for newly hired pediatric staff nurses may be a challenge.

Analysis of Self

As a practitioner I will be able to apply evidence-based research to promote all areas of my practice in nursing administration. I will be able to facilitate future projects within my organization using the knowledge I have gained from this experience. I learned the importance of reviewing literature to identify ways in providing education to a group of individuals who all learn differently. I will take the knowledge gained through research and test the findings within the practice setting. I will encourage others to utilize the literature to improve patient outcomes in all areas of practice.

My didactic learning experience at Walden University has supported my clinical expertise in many ways. I am able to apply learned knowledge to my professional practice. As a scholar I have been able to develop this project through my educational development at Walden University. With this education, my peers and administration

have sought me out for future projects. I have been able to analyze research to promote best practice in the clinical setting by developing this project using evidence-based practice and nursing theory.

As a project manager I have learned how to identify a multidisciplinary team of key stakeholders, and have an open mind to analyze and evaluate the situation with a focus on improving the practice. I have identified steps needed to incorporate a quality improvement project. This included developing staff nurse education in conjunction with the institutions policy and practice. Future projects will be designed to solve practice problems and evaluate outcomes to promote best practice.

My long-term goal in nursing administration is to continue to empower other nurses to continue their didactic learning. This demonstrates my commitment to the profession and continued education in nursing. Challenges will be the growing complexity of the healthcare system, but the growing number of doctorate-prepared nurses will advance practice through implementation of research to improve quality and safety in healthcare. My contribution to the profession will be with the knowledge and experience I have gained I will be able to work collaboratively and successfully with multidisciplinary teams to improve patient outcomes.

Summary

Clinical pathways are gaining use in the pediatric population, both in the medical and surgical areas. Unfortunately as co-morbidities increase in this population, researchers will need to look at evidence-based practice to successfully manage these diseases. After pathways are developed it will be important to identify best practice in

educating staff on their use. Homer and Ryan (2013) found nurses being asked to perform new roles can feel unprepared and ineffective without the proper education, and this could lead to nursing staff dissatisfaction. It is important to educate nurses in their expected tasks so they can continue to provide the best care to their patients in hopes to promote better patient outcomes.

Section 5: Scholarly Product for Dissemination

Introduction

The development and implementation of an interactive learning education program was planned with a goal to decrease length of stay and improve nursing documentation of postoperative cares of adolescents following a posterior spinal fusion. The purpose of this quality improvement project was to develop an education program using case studies and a flipped classroom approach to deliver the content to pediatric staff nurses in a hospital general care setting prior to the implementation of a post-operative clinical pathway for adolescents following a posterior spinal fusion. The design of the quality improvement project answered the questions (a) does nursing education performed in an interactive nursing environment result in compliance in the utilization of the clinical pathway based on the documentation of pain scores measured by patient chart reviews and (b) does implementation of the postoperative clinical pathway for adolescents following a posterior spinal fusion for idiopathic scoliosis decrease the patient's length of stay in the hospital.

Project Purpose and Outcomes

The purpose of this quality improvement project was to develop an education program to deliver education to pediatric staff nurses prior to the implementation of a post-operative clinical pathway for adolescents following a posterior spinal fusion. The objectives were; (a) develop the education program, (b) provide the nurses with the education using an interactive learning environment and (c) evaluating the use of the clinical pathway by using prospective chart reviews. This project has not yet been

implemented. Currently, the orthopedic surgeons have completed the clinical pathway and the order sets and they are being entered into the EMR by IT. When this is complete the education for nursing staff can begin to be developed.

Theoretical Framework

The theoretical framework for this project was Kolb's experiential learning theory. Kolb's focus on learning style evaluates the nurse's most favorable method of learning such as watching, thinking, feeling, and doing. Kolb's theory states experiences must be transformed for learning to occur; therefore one must assess, plan, intervene, and evaluate a situation in order for learning to occur (Lisko & O'Dell, 2010). This type of learning is interactive learning with a hands-on approach to facilitate critical thinking. The use of interactive learning within this project will provide nurses with different learning styles to benefit from the education. The education will incorporate activities that include: listening, reading, seeing and doing. This will include listening to the direction in the classroom, reading the scenarios, seeing the clinical pathway on the computer, determining cares to implement, and documenting the postoperative cares. The vision for this project was to develop an environment conducive to all methods of learning.

Implications for Practice

Clinical pathways in the pediatric population are increasing; however the need for more published literature is needed. The creation of the preoperative education, clinical pathway and order set, and visual poster to hang in the patient's room upon admission will engage the patient and family in postoperative care. The poster at the bedside will be

a visual aid for the patient all caregivers to support the progress needed each postoperative day. The nursing staff need to be educated on this new process as they are closest to the bedside and will be the ones to implement the orders and cares. Nursing engagement and implementation is key to the success of the pathway.

The interactive learning environment was researched to identify an environment where all nurses would be successful in the education of the implementation of the new process for caring for the adolescent following a posterior spinal fusion. The flipped classroom approach is a growing concept in upper level nursing courses and is a growing phenomenon in the healthcare environment. More research is needed in this area.

Plans for Dissemination

It is important to know the pieces of this plan for a practice change in caring for adolescents postoperatively following a posterior spinal fusion is continuing to evolve within this organization in the Midwest. The preoperative education booklet is complete, the poster is being printed, and the orthopedic surgery team is collaborating on the clinical pathway and writing the order set. The plan will be to complete the interactive nursing education as described above after all components of the care plan are finalized. It is important to do this to prevent re-educating on last minute changes that may occur.

The plan for dissemination of this project is to present the interactive learning education plan at a nursing conference. The outcome and evaluation of this nursing education will also be written and submitted to nursing journals. This plan for dissemination contributes to nursing education within a healthcare setting as evidenced

by the presentation to other nurses within a conference setting. It also contributes globally through the journal submission and publishing.

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Appendix A: Posterior Spinal Fusion Clinical Pathway Education Objectives

**Department of Nursing
Midwest Clinic
Education and Professional Development
Posterior Spinal Fusion Clinical Pathway Education
Objectives**

January 9, 2014

DOM-MN-104

1:30 pm – 3:00 pm

Lisa Scheiber-Case, MSN, RN

Objectives

1. Utilize the clinical pathway to navigate through video examples, case studies, and scenarios.
2. Demonstrate the use of the clinical pathway by documenting interventions.

Bibliography

Lisa Scheiber-Case, MSN, RN is a staff nurse on pediatrics. She graduated from Walden University with a Master's of Nursing in Leadership and Management in 2010, and is continuing her doctoral studies with an expected graduation date of February, 2014. She completed the Nursing Leadership Perspectives Program, and is a Pediatric Certified Diabetes Educator. She is an active member in many pediatric committees. Lisa enjoys traveling and health fitness.

Appendix B: Posterior Spinal Fusion Clinical Pathway Education Agenda

**Department of Nursing
Midwest Clinic
Education and Professional Development
Posterior Spinal Fusion Clinical Pathway Education
Agenda**

January 9, 2014

DOM-MN-104

1:30 pm – 3:00 pm

Lisa Scheiber-Case, MSN, RN

TIME	CONTENT	OUTCOME
1:30 pm	History of the project and plan for clinical pathway education. View pathway on iPads.	Share information
1:50 pm	Videos and large group discussion on clinical pathway implementation.	Sharing information Large group discussion
2:10 pm	Small group discussion with scenarios	Sharing information Large group discussion
2:30 pm	Documentation of implementation of scenarios.	Sharing information Large group discussion
2:50 pm	Questions	

Appendix C: Posterior Spinal Fusion Clinical Pathway Education Case Studies

Case Study One

Part 1: J. C. is a fifteen year old who just transferred out of the PICU this afternoon at 1400. He had a posterior spinal fusion for a diagnosis of idiopathic scoliosis yesterday. It is now 1530 and you are just beginning your shift. Please document your assessment on this patient.

Part 2: It is 1900, and J. C. is now asking to get out of bed and eat something. According to the clinical pathway what type of diet and activity should J. C. be performing? Determine the answer, and document your interventions.

Case Study Two

Part 1: J. C. is postoperative day 2. He is complaining of 7 out of 10 pain. What are your options for pain management according to the clinical pathway order set?

Part 2: Two hours have passed and he is still having pain. What can you do? Document your interventions.

Case Study Three

It is postoperative day 3 and the physical therapist phoned you at 0800 to tell you they won't be able to see the patient until 1230 today. What nursing interventions are you responsible for in the morning? Address pain management, activity, and diet. Document your interventions.

Case Study Four

It is postoperative day 4, and J. C. has not had a bowel movement. He is tolerating a general diet, but complains of abdominal pain. What can you do? Document your interventions.

Appendix D: Posterior Spinal Fusion Clinical Pathway Education Evaluation

Department of Nursing
Midwest Clinic
Education and Professional Development
Posterior Spinal Fusion Clinical Pathway Education
Evaluation
 January 9, 2014
 1:30 pm – 3:00 pm

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
Lisa Scheiber-Case, MSN, RN The presentation style of the instructor contributed to my learning.				
I was able to achieve the learning objectives: 1. Utilize the clinical pathway to navigate through video examples, case studies, and scenarios. 2. Demonstrate the use of the clinical pathway by documenting interventions.				
The education changed my attitude on the importance of implementation and documentation of the clinical pathway.				

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
I have increased my knowledge and skills.				

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Disagree</i>
I am motivated to apply what I learned from these activities to my clinical practice.				
My overall rating of this activity is positive.				
Overall comments:				

Appendix E: Evaluation Metrics

Evaluation Metrics
An Education Plan for Pediatric Nurses Following the Development of a
Posterior Spinal Fusion Clinical Pathway

Evaluative Metric	Source of Information	Collection Timeline	Target Metric
Pain interventions and pain scores documented on the general care flowsheet under "Pain"	Chart audits	Tool completed: -3 months -6 months -9 months -12 months	Pain interventions will be documented as well as pain scores at least every four hours during length of stay
Diet advancement documented on the general care flowsheet under "Nutrition"	Chart audits	Tool completed: -3 months -6 months -9 months -12 months	Diet will be advanced per the clinical pathway
Bowel status documented on the general care flowsheet under "Elimination"	Chart audits	Tool completed: -3 months -6 months -9 months -12 months	All patients will be given stool softeners and/or laxatives per the clinical pathway
Activity level documented on the general care flowsheet under "Activity/Mobility"	Chart audits	Tool completed: -3 months -6 months -9 months -12 months	All patients will follow activity and mobility recommendations based on the clinical pathway and physical therapy recommendations
Length of stay determined by admission date and discharge summary.	Chart audits	Tool completed: -3 months -6 months -9 months -12 months	Length of stay will be 4-5 days