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Self-Efficacy and Select Characteristics in Nurses Who Respond to a Pediatric Emergency

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COLLEGE OF EDUCATION

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Abstract

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by

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MA, New York University, 1996

BS, New York University, 1987

Doctoral Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Nurses at a suburban northeastern U.S. community hospital reported that they felt unprepared to effectively respond to a pediatric emergency. Empirical data were not available to identify if this local problem was due to a lack of the nurses' self-confidence or if other factors were involved. The purpose of this study was to determine if there were relationships between nurses' self-efficacy in pediatric emergencies and their knowledge of pediatric emergency care, as well as their years of clinical experience, nursing education, pediatric life support certification, specialty certification, and caring for pediatric patients. In addition, the research questions guided the investigation to determine if any of the variables could predict nurses' self-efficacy in pediatric emergencies. The theoretical framework was based on Bandura's social learning theory, which incorporates the concept of self-efficacy, as well as Zimmerman's self-regulated learning theory. A quantitative correlational design was used with a convenience sample of 37 nurses. The data were analyzed using multiple regression analysis and correlations to determine the relationships among the variables. Results showed none of the variables predicted self-efficacy; however, years of nursing education, years of pediatric life support certification, and years of clinical experience were all significantly related to knowledge. Based on the results, a 3-day educational program was developed to address pediatric emergency practice. The results of this study can provide positive social change through a better understanding of nurses' self-efficacy regarding emergency care of pediatric patients in the community hospital. This will inform future nursing education and training efforts, and positively impact the outcomes of pediatric patients.

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Dedication

I dedicate this work to my parents who always believed in me, but unfortunately are unable to see me succeed. Without their example of hard work, I would not be here.

Acknowledgments

I acknowledge my family and my sister for believing in me throughout this process. They have supported and guided me while always believing I would succeed.

Table of Contents

List of Tables v

Section 1: The Problem 1

Introduction 1

Definition of the Problem 2

Rationale 2

Evidence of the Problem at the Local Level 2

Evidence of the Problem from the Professional Literature 4

Purpose 7

Definitions 7

Significance 8

Research Questions and Hypotheses 9

Review of the Literature 10

Theoretical Framework 11

Review of the Pertinent Literature 14

Implications 30

Section 2: The Methodology 32

Introduction 32

Research Design and Approach 32

Setting and Sample 33

Instrumentation and Materials 34

Data Collection and Analysis 35

Data Analysis Results 38
Characteristics of the Participants 39
Self-efficacy Questionnaire 41
Knowledge Test 41
Multiple Regression Analysis of Independent and DependentVariables 41
Additional Analysis 44
Summary of Results 45
Assumptions, Limitations, Scope, and Delimitations 49
Assumptions 49
Limitations 50
Scope and Delimitations 50
Participant Protection 50
Conclusion 51
Section 3: Project 53
Introduction 53
Rationale 54
Literature Review 55
Kolb's Theory of Experiential Learning 55
Meeting the Demands of Healthcare 58
Professional Development and Training Curriculum 59
Learning Modalities in Curriculum Development 60
Simulation 60

Didactic Instruction……..……..63

Discussion……..64

Reflection……..65

Summary…….....…66

Project Description 66

Instructional Materials 70

Existing Supports.....70

Potential Barriers 70

Potential Solutions to Barriers……..…… 71

Roles and Responsibilities of Students and Instructors……..…..……..71

Project Evaluation Plan 71

Formative Evaluations ..…….72

Summative Evaluations ……..…… ….72

Summary……73

Project Implications 74

Conclusion 74

Section 4: Reflections and Conclusions.....76

Introduction..... 76

Project Strengths and Limitations.....76

Recommendations for Alternative Approaches.....78

Scholarship, Project Development, and Leadership and Change 80

Reflections of the Importance of the Work.....81

Implications, Applications, and Directions for Future Research 83

Conclusion 85

References 87

Appendix A: Project 106

Appendix B: Cover Letter 144

Appendix C: Demographic Questionnaire 145

Appendix D: Self-Efficacy Questionnaire 146

Appendix E: Permission for GSE Scale 147

Appendix F: Pediatric Knowledge Test 148

List of Tables

Table 1: Demographic Characteristics of Participants in the Study Sample 41

Table 2: Regression Results.....43

Table 3: Results of Regression Analysis 44

Table 4: Correlations.....45

Section 1: The Problem

Introduction

Within the profession of nursing there are many specialties for different patient populations in which the nurse may practice. Populations include adults, children, critically ill patients, and surgical patients. Specializations may include pediatrics, geriatrics, gynecology, oncology, orthopedics, neurology, cardiac, critical care, emergency care, behavioral health, general surgery, and trauma. Because specialization is common in nursing practice, nurses may care for a population infrequently in their practice, but they must still be knowledgeable in emergency management of all patient populations. The nurses' perceptions of their abilities and the quality of care that they deliver may be impacted by the infrequency of caring for a patient type, such as the pediatric patient.

Self-efficacy is an attribute defined by Bandura (1982). Bandura stated that each individual has a level of confidence to perform in a unique situation. The performance is gauged on how well the individual is able to navigate obstacles as they arise. Bandura proposed that an individual with high self-efficacy can perform successfully in many situations.

A lack of self-efficacy may occur in nurses who do not have the opportunity to practice skills on a regular basis. Knowledge can also be lost due to a lack of application to practice. Although pediatrics is a specialty, general practice nurses may also care for pediatric patients. These local nurses have expressed concern that they will not be able to rapidly respond to pediatric emergencies that they rarely see. While nurses participate in

professional development in order to maintain licensure and competency, low frequency medical scenarios may require more practice than required by the Joint Commission or obtained through Pediatric Advanced Life Support (PALS), or other American Heart Association (AHA) courses (Macyk, 2011).

Definition of the Problem

The local setting for this problem was a suburban community hospital in the northeastern United States that primarily serves adults needing acute care, but also provides pediatric services. Nurses may work in a variety of departments within the hospital, including the pediatric emergency room and ambulatory services. These nurses must maintain skills to include (a) responding to life-threatening critical events, (b) administering emergency medications, (c) collecting appropriate medical equipment for the physician and assisting in procedures, and (d) interpreting the physiological responses of the patient. While some of these skills are practiced on a daily basis, those related to pediatric emergencies are uncommonly practiced. The nurse's ability to provide a rapid response and deliver appropriate emergency care is critical to the survival of the pediatric patient (Macyk, 2011). The nurses and their supervisors have expressed concern that the lack of practice of these skills may lead to poor performance in pediatric emergency situations.

Rationale

Evidence of the Problem at the Local Level

The pediatric department at this community hospital has 2,500 admissions per year, with 150 yearly admissions to the pediatric intensive care unit, according to the

informatics nurse at the facility (personal communication, November 3, 2012). The institution is a designated trauma center and has a dedicated pediatric emergency room. Approximately 3,000 patients a year are seen in the pediatric emergency room. In this institution, hospital-wide total cardiac arrests outside of the intensive care unit numbered 86 for the year 2011. There were three cardiac arrests in the pediatric department pediatric intensive care unit in 2011. According to the informatics nurse at the facility, two previous cardiac arrests in the pediatric department occurred in 2008 (personal communication, November 3, 2012).

The nursing staff at the hospital used a modified Pediatric Early Warning System (PEWS; Skalezty, Raszynski, & Totapally, 2012) tool to identify deterioration in a child and communicate concerns to the physician. The modified PEWS score is derived from a tool developed by Monaghan (2005) that assesses behavior as well as cardiovascular and respiratory criteria in the pediatric patient. A high score indicates that the patient is at risk for deterioration. The use of the modified PEWS score can help identify pediatric patients before an emergency crisis occurs (Skalezsty et al., 2012). This tool had been in use for 3 years on the pediatric unit at the hospital. The identification of at-risk patients is essential; therefore, the use of the PEWS was implemented on all pediatric units of the entire health system.

One of the challenges in the care of the pediatric patient is providing the appropriate interventions for a deteriorating patient. In many children's hospitals, medical emergency teams, also known as rapid response teams, exist. These teams consist of personnel with expertise in critical care who report and intervene at the bedside of the

critically ill patient (Fantus & Nantus, 2011). There was a rapid response team within the local institution, but the team provided care only for adult patient emergencies. No such team existed for the pediatric patients at the time of the study. According to the facility's informatics nurse, the rapid response team was initiated 880 times in 2011, with 160 patients transferred to a higher level of care. None of the patients were children (personal communication, November 3, 2012).

The AHA requires validation and renewal of basic and advanced cardiac life support skills every 2 years, but the nursing staff requested more frequent practice of these skills. In addition, the emergency room nursing staff identified regular practice of pediatric emergency skills as an important necessity to ensure preparedness. Key stakeholders were concerned that the nurses, although meeting all educational requirements, lacked the ability to respond rapidly and appropriately in a pediatric emergency. These stakeholders include the chief nursing officer, the nursing directors of the emergency room, physicians, maternal child services, and the director of nursing education. Also, the nurse managers of the emergency room, ambulatory services, recovery room, and the pediatric unit were invested in ensuring that the nurses were competent in emergency situations.

Evidence of the Problem From the Professional Literature

There is evidence that pediatric patients typically require emergency care for different reasons than adult patients. Reasons for adult emergency care include sudden cardiac arrest, trauma, and stroke (Berg et al., 2010). Pediatric patients need emergency care more often due to trauma, respiratory distress, and sepsis (Kleinman et al., 2010).

Information about the prevalence of pediatric trauma is available from the Department of Health Statistics (DOH, 2010) and the Centers for Disease Control and Prevention (CDC, 2010). Pediatric trauma is the number one killer of children in the United States. According to the 2010 Trauma Surgeons National Data Base Bank, over 135,000 children up to the age of 18 were victims of trauma and, in 2011, the American College of Surgeons reported over 140,000 pediatric traumas (Fantus & Nathens, 2011). Trauma in the home such as sudden infant death syndrome, submersion, poisoning, choking, severe asthma, and pneumonia are causes of cardiopulmonary arrest in pediatric patients (Kleinman et al., 2010).

Cardiopulmonary arrests in pediatrics are rare. Between 0.7% and 3% of hospitalized children will experience a cardiopulmonary arrest while hospitalized (Tucker et al., 2009). Consequently, nurses who care for pediatric patients perform the skills of pediatric emergency situations and cardiopulmonary arrest infrequently.

The Joint Commission (2009) recommended a review of high risk events and procedures to be done annually for hospital staff. Pediatric patients admitted to specialized pediatric units are frequently encountered in the emergency room, ambulatory surgery area, operating room, and post-anesthesia care units. These patients are scheduled for tests in radiology, endoscopy, and cardiology. Nurses in these areas of the hospital are required to be able to perform effectively during pediatric emergencies.

Macyk (2011) analyzed the challenge of skills currency in the pediatric nurse in a large pediatric service housed within an adult acute care hospital, and the hospital's plan to address the issue. Macyk addressed the problem regarding the need to keep nurses

competent who encountered the pediatric patient infrequently such as when they require radiology services, special procedures, and ambulatory surgical intervention. Macyk's research informed this project study, where the local problem is the nurses' possible lack of self-efficacy, knowledge, and clinical experience in dealing with pediatric emergencies.

There is evidence in the literature that individuals who do something infrequently may experience increased stress, role strain, and role ambiguity (Cranford, 2013). If the tasks are not well defined, the staff may be perplexed as to what to do next. In her correlational study, Cranford (2013) found that faculty nurses who occasionally taught pediatrics to students experienced a lack of support. She found that when someone was not well trained or felt a lack of support, role strain existed (Cranford, 2013). Another challenge is for practicing nurses to recognize their limitations in practice. Nurses must participate in developing competent performance throughout their practice as it is part of their professional responsibility (Cornock, 2011).

A discussion of nurse competency has been noted in the literature for some time. Cornock (2011) discussed the importance of competency in nursing practice. He explained that as professionals, nurses are required to maintain competency. Gould (2013) examined practitioner's skills in emergencies in an attempt to understand the phenomena of competency. Hunt et al. (2007) and Issenberg et al. (1999) looked at the quality of skills by practitioners in order to enhance team performance of lifesaving interventions during resuscitation or an emergency situation.

Purpose

The purpose of this study was to determine if there were relationships between nurses' self-efficacy in pediatric emergencies and their knowledge of pediatric emergency care, as well as their years of clinical experience, nursing education, pediatric life support certification, specialty certification, and caring for pediatric patients. In addition, the research questions guided the investigation to determine if any of the variables could predict nurses' self-efficacy in pediatric emergencies.

Definitions

The following definitions describe terms that are used throughout the study. Each definition has been substantiated in the literature.

Certification: Passing specialized testing in an area of nursing practice demonstrates educational qualification (Knudson, 2013).

*Pediatric emergency***:** Pediatric emergency includes a situation in which the patient condition is deteriorating. It may include, but is not exclusive to, cardiac and respiratory arrests (Kleinman et al., 2010).

Pediatric nurses: Pediatric nurses are defined as any nurse who cares for and encounters patients under 18 years of age in their position (Macyk, 2011). The nurses may or may not hold certification as a pediatric nurse.

Self-Efficacy: Self-efficacy is an individual's confidence in his or her ability to be successful in a new or stressful situation. Self-efficacy is influenced by the feeling practitioners experience when they are successful in practice (Bandura, 1982). Self-efficacy will be measured with the Self-Efficacy Scale (Schwarzer & Jerusalem, 1995).

Significance

Pediatric patient outcomes at the local institution, and possibly other similar institutions, are at risk if the nurses cannot provide appropriate emergency care. Nurses must be able to perform interventions competently and in a timely manner. It is imperative that nurses are able to intervene so that patient complications are minimized and outcomes are optimized. Nursing personnel are typically the first to encounter the patient in a deteriorating state. The initial few minutes of action can mean the difference in the outcome for the patient (Macyk, 2011).

Self-efficacy is an important aspect of the nurse's performance in an emergency. A nurse must have the confidence that his or her skills will result in competent care for the child in an escalating emergency. Mitchell, Watson, Curtis, Harris, & Mitchell (2012) discussed the critical elements in order to perform effectively in pediatric emergencies. These essential elements include recognition of the critically ill child, initiating treatment, working as a team, maintaining and improving skills, communicating with the patient and family, as well as implementing safeguards for the pediatric population (Mitchell et al., 2012).

Competence of skills is an expectation of the practicing nurse (Macyk, 2011). In the nursing education literature, competency has been discussed in reference to assessment skills (Giddens, 2007), communication skills (Salmon & Young, 2011), multicultural skills (Dean, 2010), and emergency skills (Ross & Bell, 2009). Sadi and Uyar (2013) postulated that performance and knowledge do not always positively

correlate. They found that in order to be successful, the student had to embody high self-efficacy and knowledge, not one or the other.

Research Questions and Hypotheses

The guiding research questions were developed to include variables that may reflect a change in the nurses' perceived self-efficacy and their knowledge of pediatric emergencies. The following were the guiding research questions for this project study.

Research Question 1*:* What are the relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies?

$H_0$1: There are no significant relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

H_a1: There are significant relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

Research Question 2: Which of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients significantly predicts self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies?

$H_0$2: None of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients predict self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

H_a2: At least one of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients significantly predicts self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

Review of the Literature

A nurse's level of self-efficacy and knowledge of pediatric emergencies may be related to his or her ability to perform in emergency pediatric situations. Staff nurses at the local site discussed their fear of emergency situations and their lack of self-efficacy regarding these situations. There has been very little research on self-efficacy among nurses who care for pediatric patients. Some research has focused on nursing students or new graduate nurses to measure their levels of self-efficacy. Other research has been

done in the specialty areas of labor and delivery, medical surgical nursing, and psychiatric nursing (Cardoza & Hood, 2012; Melnyk, 2008). Researchers studied self-efficacy in relation to emergency situations, but these situations were adult in nature (Mayburg, Hoffman, & Motsch, 2009).

The literature search was conducted electronically. Medline, CIHNAL, Academic Search Complete, and ERIC were the data bases explored. Articles reviewed were limited to the English language from peer-reviewed journals published primarily within the last 5 years. If an older study was particularly pertinent it was included. Search words and phrases included, *self-efficacy nursing, social learning theory, pediatric nurses, pediatric emergencies, pediatric code, pediatric emergencies self-efficacy, self-confidence* and *stress in nursing*. The literature review included dissertations in the nursing field related to nursing self-efficacy or nursing self-confidence. Healthcare related fields were included in the search. Articles examining self-efficacy and self-confidence in physicians, medical students, pharmacists, and support staff were included. Specialty areas of neonatal, emergency care, critical care, obstetrics, pediatrics, and medical surgical areas were included. Research articles that focused on the self-efficacy or self-confidence of nurses, nursing students, graduate nursing students, and residents were included. The literature review that follows was developed from the articles and papers found in the literature search.

Theoretical Framework

A theoretical framework is essential to quality research (Rourke, Schmidt, & Garga, 2010). Elements of Bandura's (1997) social learning theory have been

incorporated as the theoretical framework to guide the project study and provide a structure of support. Bandura believed that how people function is related to their beliefs about themselves. Their functioning elements include cognitive, motivational, affective, and decisional factors (Caprara et al., 2008). Self-beliefs of efficacy and professional motivation are intertwined (Bandura, 1993). Bandura's social learning theory encompasses three points in a triangle interacting within the environment. These three points are cognitive, affective and biological events, and behavioral events (Erlich & Russ-Eft, 2011). The cognitive element deals with the intellect. Affective, biological, and behavioral events explain how personality and history assist in learning. Self-efficacy, according to Bandura (1993), develops through the learners' exposure to information. The exposure includes past experiences and developing a mastery of tasks. It also includes experienced practitioners performing and observing successful activities. Encouragement from others on the team increases confidence to perform successfully. Bandura's concepts include the personal drive of the student to perform competently. The personal drive to increase competence is an essential force to motivate the learner, and adult learners use this force to achieve goals of promotion or knowledge (Knowles, 1989).

Self-efficacy regulates personal motivation (Bandura, 1993). The "emotional mediator" (Bandura, 1993, p. 118) of self-efficacy is the personal belief of how well an individual is able to perform in a stressful, unfamiliar situation. This feeling a person has about self relates to performance in a given task. The emotional process has two alternatives, the learner who stresses over the impending threatening task or the learner

who embodies the confidence to overcome the threat of the unknown (Bandura, 1993). Bandura discussed the impact of self-efficacy on career choice. He believed that the choice of career is related to a person's personal belief in him or herself; the greater the self-efficacy, the more choices of career, and the greater the potential advancement in the career, the more challenging the career choice (Bandura, 1993).

Self-regulation is a key component to the theory. Self-regulation is the ability of the student to stick with the task of learning even in an adverse environment (Caprara et al., 2008). An adverse environment may be one that is highly stressful or a situation that has many barriers to overcome before a resolution is reached. Finally, an adverse environment may be a situation that requires a great deal of critical thinking where the student is unable to perform because of a chain of events, such as a pediatric emergency. Self-efficacy is improved by cognitive modeling. This means that knowing the information is not enough. The student must also be able to perform after being guided in that performance (Bandura, 1993).

Building on Bandura's original theory, Zimmerman (1992) explained self-regulated learning as a process that incorporated a three-step cycle: (a) forethought, (b) performance, and (c) self-reflection. Forethought is the review of information and experience, while performance is the action or practice. Self-reflection helps the learner integrate the experience. Clapper (2010) discussed the advantages of role play and simulation as a guide to reflect understanding of the material presented to the adult learner. The adult learner learns by doing and then improves the act of learning by reflections of performance. Self-efficacy has been examined in many different

populations. For example, Taiwan-based nursing researchers measured self-efficacy in diabetic medical care personnel (Wu et al., 2012). Erozkan (2013) examined self-efficacy in relation to interpersonal and communication skills in adolescents.

Miyoshi (2012) examined self-efficacy as task self-efficacy and general self-efficacy. He hypothesized that there was a relationship between the two. Task self-efficacy was defined by completing a task. General self-efficacy was defined as an individual's overall confidence to succeed (Miyoshi, 2012). Miyoshi (2012) examined a sample of students, quantified their self-efficacy given a task, and compared this score to general self-efficacy. He found that task self-efficacy does not affect general self-efficacy. This research is pertinent to this proposal because the task of performance in an emergency may not reflect the nurses' general sense of self-efficacy.

Another guiding theoretical framework for the project study was the Iowa evidence based practice model (Titler et al., 2001). In this framework, the practicing nurse relates evidence to guide his or her clinical practice The Iowa model was developed to guide the clinical practicing nurse to develop questions. Once the question is articulated, the next step is to examine the evidence in the literature to find if there is an existing answer to the proposed question. If the literature fails to lead the clinician to a definitive answer, the next step in the Iowa model is to conduct research. Finally, the researcher evaluates the outcome and weighs the evidence for implementing change. The Iowa Model was the guide leading to the present study.

Review of the Pertinent Literature

The following review highlights literature in which self-efficacy has been examined in the health care professional. The confidence to perform a task well is incorporated in self-efficacy (Townsend & Scanlan, 2011). The literature review revealed interventions to improve self-efficacy and confidence in the health care provider. Many of the studies encompassed an intervention, such as practice or simulation, to improve self-efficacy. Some studies included multiple variables that may impact self-efficacy, and other studies involved the multidisciplinary health care team, not just an individual member of the team.

The primary goal of any training is to improve performance (Sergeev et al., 2012). A group of military medical personnel was studied to see if a relationship existed between performance on training mannequins and self-confidence. The medical personal included residents and interns in the emergency department. The practice sessions included procedures that were critical to the patient care, but were not a daily occurrence in the emergency department. The procedures were characterized as low volume, high risk and included such things as chest tube insertion, intraosseous line insertion, and intubation. A questionnaire was administered to participants who were adult life support providers. The questionnaire included responders' report of how many times they had performed the tasks, if the task was performed on an actual patient or a mannequin, and the confidence level for each task on a scale of 1-10. Ten was the greatest confidence. The scores were compared. Results indicated that self-confidence levels in procedural performance were positively associated with experience gained from practice (Sergeev et

al., 2012). This study clarified the point that confidence, or the practitioner's view of his or her performance, may change with practice.

Self-efficacy, confidence, and skill have been researched in many different nursing populations. Melnyk (2008) reviewed two nursing studies that provided evidence that patient lab simulation activities augmented clinical practice skills, and simulation could be used to enhance competency. The first study reviewed was with new graduate nursing students who had limited experience, and the other was with labor and delivery nurses practicing obstetrical emergencies. These two groups both had strong potential for low self-efficacy due to the lack of practice of essential skills.

In the first study (Melnyk, 2008), the researchers developed a 14-week residency program as an intervention to impact self-efficacy. The residency was designed for novice nurses entering practice. Hands-on skill practices were developed throughout the program, in addition to support for the novices in the form of encouragement and clinical expertise. The researchers measured confidence with a quantitative questionnaire on a weekly basis during the residency program. They concluded that the nurses' confidence increased after the program, and the nurses felt better prepared to start practice.

In the second study (Melnyk, 2008), the researchers examined self-efficacy in obstetrical emergencies in a convenience sample that included obstetrical practitioners of varying years of experience. The participants were polled as to their confidence before and after the interventions. There were 42 teams who received opportunities to practice skills in a simulation lab. All skills were obstetrical emergencies, such as transporting the patient experiencing hypovolemia due to hemorrhage to the operating room, and

cardiopulmonary resuscitation. The researchers reported a significant increase in confidence and self-efficacy in the practitioners after the practice of skills. Both studies demonstrated an increase in self-efficacy related to practice.

Stanley and Pollard (2013) examined the relationship between a nurse's knowledge of pediatric pain and his or her self-efficacy in relation to treating pediatric pain. Stanley and Pollard observed different variables that could possibly affect the correlation of self-efficacy and the treatment of pediatric pain. The variables included nursing experience, knowledge, professional certification, membership in specialty organizations, and years of pediatric nursing. They discovered no significant relationship between knowledge and self-efficacy or knowledge and nursing experience. They did find a significant relationship between knowledge of pain, years of pediatric nursing experience, and membership in a professional nursing organization. The results of this study did not support a relationship between knowledge and self-efficacy. Results did support the relationships of self-efficacy and the membership in specialty organizations, as well as years of experience in areas of specialty. This study also supported the use of multiple variables as proposed in the present study.

Cardoza and Hood (2012) used a correlational design with a convenience sample to research nursing students' self-efficacy after simulation during two semesters. They used the self-efficacy scale developed by Schwarzer and Jerusalem (1995) to rate the students. They discovered that some students had higher self-efficacy prior to the simulation than afterwards. The researchers explained this finding by stating the students did not have a clear picture of emergency situations. The emergency situations were not

experienced in their clinical rotations on the hospital units. Once they saw the true nature of emergency situations during the simulations, their self-efficacy decreased. Yang and Thompson (2010) examined both nursing students and experienced nurses in a study of confidence and risk assessments in emergency vignettes. The emergency situations were classified as low volume, high risk occurrences. Neither the students, nor the nurses experienced the vignettes often in practice. The sample was split into two groups that included 100 students and 30 experienced nurses. The risk assessment judgments of the students and the experienced nurses were no different in relation to an emergency situation. Yang and Thompson reported that the experienced nurses tended to be over-confident, while the student nurses were under-confident. Even though the nurses did not differ in the content of their risk assessment, their self-perceived confidence varied. The researchers concluded that self-efficacy is always in flux, and it changes depending on the task at hand. A strong self-efficacy for one task does not predict strong self-efficacy for another. Both studies concluded that practice does not always improve self-efficacy.

Other factors are attributed to the success of a student. Boswell (2012) conducted a quantitative study with a convenience sample of undergraduate students. Self-efficacy was a predictor related to a particular task. Boswell hypothesized that students had a high sense of self-efficacy if they were able to perform a task well. A positive correlation was found between self-efficacy and task performance after interventions of training. Boswell concluded that interventions to improve self-efficacy in the undergraduate student should include training in project planning and time management. Another study of undergraduate students undertaken by Taylor and Reyes (2012) examined undergraduate

nursing students' self-efficacy and resilience. Resilience was defined as the ability to adapt to a situation. Performance in school was defined as grades in nursing courses. Two questionnaires with high inter-rater validity and consistency were used in the study. Findings included that the nursing students with greater self-efficacy and resilience were able to perform better academically in school. Self-efficacy and resilience were positively correlated to academic success in school.

Macyk (2011) discussed the importance, as well as the challenge, of keeping nurses competent for pediatric emergencies that occur infrequently. The challenge lies in achieving competence when health care staff is providing care to pediatric patients within an adult acute care hospital. Macyk discussed the need to keep personnel clinically current and ready with competencies specific to the population being served. The difficulty is in knowing which interventions and strategies are most effective with the nursing staff in achieving competence and self-efficacy in pediatric emergencies.

Jeffries et al. (2010) found that practice is required in order to improve mastery of skills that occur infrequently. These skills are low volume, high risk skills. Errors occur when skills are not practiced. Advanced practice nurses were asked to report their self-efficacy regarding cardiovascular assessment after an educational intervention. The researchers found increased self-efficacy in the participants after the intervention, supporting the impact of practice.

Similar to the previous study, Smedley, Morey, and Race (2010) found an increase in self-efficacy after an intervention in their research on self-efficacy in nurse preceptors. In this quantitative study conducted in a medical center setting, participants

were asked to complete a questionnaire on self-efficacy related to training new nurses. The staff then participated in an educational offering aimed to increase their knowledge and skill of orienting new nurses. Smedley et al. discovered an increase in knowledge, an increase in preceptor skill, and an increase in confidence and self-efficacy after the educational intervention. This led to a more positive attitude toward nursing students and improved the experiences of the students.

Keeping up with advances in all areas is essential to practice. Efstathiou, Papastavrou, Raftopoulos, and Merkouris (2011) found that self-efficacy increased nurses' resistance in changing a practice already learned. The researchers examined the practice of infection prevention among nurses. They also polled the nurses as to their self-efficacy and years of practice. Nurses who learned infection prevention practices prior to universal precautions found it difficult to change to current standards (Efstathiou et al., 2011). Self-efficacy played a role in the nurses not changing to meet evidence-based standards. This may have implications in the staff not being able to change to meet the needs of a new population, such as pediatrics. If nurses have high self-efficacy and confidence related to their current practice, then adopting a new practice can prove difficult. This study examined the characteristics the nurses possessed that led to an increase in self-efficacy and, therefore, supports reviewing many variables including years of experience, specialty and emergency certifications, and education level.

There are many physiological changes in the pediatric patient from birth to adolescence. In a recent review of pediatric emergency care for physicians, it was reported that this dynamic change of the child's physiology increases the caregiver's

reluctance to administer medical care and decreases self-efficacy in the practitioner caring for the patient (Mayburg, Hoffman, & Motsch, 2009). The pediatric patient ranges from the age of birth to 18 years of age. During this time the child experiences unprecedented growth and development of physiological systems. Vital signs, normal laboratory values, and milestones change frequently. Physiological alterations in illness are complex, and vital signs change with growth and maturity of the child. The practitioners polled reported low self-efficacy in caring for a child in an emergency situation when children were not part of their daily practice (Mayburg et al., 2009). Although this particular review was focused on physician care, the same concerns can be generalized to nurses.

In a study conducted to analyze interdisciplinary teams (van Schaik, Plant, Tsang, & O'Sullivan, 2011), self-efficacy increased after training. The sample included nurses and pediatric residents as the interdisciplinary team. Before and after simulation, the participants were asked to complete pre and post self-efficacy assessments, specifically regarding pediatric emergency situations. The self-efficacy assessments were used in previous research and determined to have satisfactory psychometric properties. The nurses and the pediatric residents reported a significant increase in self-efficacy after the simulation program. The researchers concluded that their simulation program was worthwhile for team training (van Schaik et. al., 2011).

DelaCruz, Farr, Klakovich, and Esslinger (2013) investigated ways to increase self-efficacy in second career students in an accelerated nursing program as they prepared for entry into practice. The researchers intervened with a program introducing the

students to professional nursing and possible expectations in the work environment. They worked with the students in three phases which they called “moving into the learning environment, moving through it, and preparing to leave it” (DelaCruz et al., 2013, p.12). The three phases included orientation, which discussed realistic challenges and expectations, enculturation of the program and nursing profession, and an intensive internship. At the beginning and end of the program, three questionnaires were administered to the students to measure self-efficacy, clinical competence, and communication skills. They found the self-efficacy scores increased when an internship was part of the program (DelaCruz et al., 2013).

Self-efficacy was examined in senior nursing students in relation to plans of pursuing a graduate nursing degree. Plunkett, Iwasiw, and Kerr (2010) sought to identify a relationship between self-efficacy and the shortage of nurses with graduate degrees. They used a correlational design and four questionnaires. The questionnaires measured variables such as self-efficacy, continued scholarly activity, and ongoing research, which the students would initiate after they completed their undergraduate education. The researchers polled senior nursing students and found that self-efficacy was low in students in regards to perceived eventual success in a graduate program (Plunkett et al., 2010). The undergraduate students did not see themselves as engaging in research, scholarly activity, or continued graduate education after graduating from their nursing program. The researchers recommended that graduate themes such as research and scholarship be fostered in the undergraduate program. These findings, where lack of exposure was related to decreased self-efficacy, relate to the present study.

Chesser-Smyth and Long (2013) examined confidence in nursing students in an undergraduate program. Confidence is an element of self-efficacy. The researchers used a mixed method, three-phase design which included pretests, posttests, and interviews. The researchers incorporated the theoretical framework of Bandura's social learning theory. The sample was 45% of the entire population of the nursing students. Forty percent of the sample students had finished a pre-nursing program prior to enrolling in the undergraduate program. The age of the students ranged from 18 to 49 years old. The researchers found that the self-confidence of the students decreased with the first clinical experience in undergraduate school. During the course of the undergraduate program, the students' self-confidence increased as their exposure in the clinical area increased. The researchers reported that the students' self-confidence was also related to the students' perceived value and communication with the healthcare team. There was a marked decrease in self-confidence if the preceptor had a poor attitude with the student.

Onova (2013) used a convenience sample of third-year nursing students to evaluate if simulation in labor and deliver emergencies would increase student nurses' self-efficacy. A pre-test and post-test design was employed around the simulation experience. The researcher found that the student nurses' self-efficacy increased post-simulation and the students' anxiety decreased. This study demonstrated that practicing skills not often used will increase the practitioners' self-efficacy. Blum, Borglund, & Parcells (2010) also examined the use of simulation, and its impact on self-confidence and clinical competence of nursing students. They used a quasi experimental, quantitative design. The convenience sample of nursing students was placed into two groups. One

group was instructed using simulation and the other was instructed using traditional methods. Using Tanner's clinical judgment model (Blum et al., 2010) as a theoretical framework, the researchers found that the group participating in simulation had a greater increase in self-confidence than the group that participated in conventional learning methods. A nurse's confidence of a skill practiced infrequently can be increased with practice.

Square (2012) examined the use of simulation to improve self-confidence in neonatal intensive care unit nurses in emergency situations in order to keep staff nurses competent in high risk, low volume situations. The researcher used a pre-test post-test design with a convenience sample of neonatal intensive care unit nurses. The findings indicated that an increase in confidence was greatest with fewer than 3 years of experience. The statistical analysis revealed that there was no significant relationship between self-confidence and the high fidelity simulation experience for the nurses. The researcher did report that the nurses valued the experience of simulation and felt it improved team work and applying knowledge at the bedside.

Swenson-Britt and Reineck (2009) examined an intervention to increase self-efficacy in nurses. To improve outcomes and improve evidence-based practice at a medical facility, researchers developed a research course for staff nurses. The researchers surveyed a convenience sample of staff nurses before and after the educational offering using an established scale of self-efficacy. They concluded that confidence in using research was enhanced by the educational intervention (Swenson-Britt & Reineck, 2009).

There was a positive correlation of self-efficacy with research fundamentals after the educational offering.

Jacobson et al. (2010) examined confidence levels in nurses after simulation experiences. The simulations were geared to enhance assessment skills of medical surgical nurses with less than 2 years of experience. The nurses were asked to assess a given scenario of a patient in potential crisis. The scenarios were scored on how well the nurse intervened given physiological signs. The nurses were polled as to their confidence level before and after the educational intervention. Confidence is reported in the literature to be an attribute of self-efficacy. An increase in confidence levels post simulation was reported (Jacobson et al., 2010). They found a positive correlation between the nurses' self-efficacy and simulation experiences. This study supports that practice increases the nurse's perception that they can administer quality care.

Nurse researchers found a relationship between self-efficacy and performance of students in the clinical setting (Townsend & Scanlan, 2011). The researchers examined the relationship of stress, self-efficacy, and academic performance in the clinical setting. In this qualitative study of nursing students, the researchers interviewed the subjects regarding their clinical rotations in school. The researchers identified defining attributes of self-efficacy which are capability, persistence, strength, and confidence. They defined confidence as the "belief to be capable to perform a task" (Townsend & Scanlan, 2011, p. 12). Stress levels were found not to be a predictor for academic performance. Self-efficacy was positively related to performance. The researchers believed they laid a foundation for how self-efficacy relates to student learning in the clinical setting

(Townsend & Scanlan, 2011). Another study related to nursing students' self-efficacy in practice was conducted by Pauley-O'Neill and Prion (2013). They examined the self-confidence of student nurses before and after clinical and simulation experiences in pediatric medication administration, a task that has been documented in the literature as high risk for nurses (Pauley-O'Neill & Prion, 2013). The research team employed a pre-test post-test design with the students in a pediatric rotation. The researcher discovered that after the 30-hour clinical rotation and the 40-hour simulation experiences, the students reported an increase in self-confidence and knowledge in relation to pediatric medication administration.

Multiple studies examined self-efficacy in nursing students after an educational intervention. They all concluded that self-efficacy increased with educational interventions. For example, Smith and Roehrs (2009) examined how high-fidelity simulation affected nursing students' self-confidence. They used a correlational design with a post-test. The students were enrolled in a first-year nursing class. The students completed the course work, clinical rotation, and simulation of scenarios not seen in the clinical area. The scenarios stressed clinical assessment and critical thinking. The students were asked to complete surveys regarding their experience. Ninety percent of the students filled out the questionnaires at the end of the course. The researchers discovered that the simulation experiences added to the curriculum and improved self-confidence in the area of problem solving. Gordon and Buckley (2009) studied the perceived self-confidence of undergraduate medical surgical nursing students during simulation. The researchers exposed the convenience sample of students to a simulation experience and

then measured their self-confidence after the experience. Gordon and Buckley (2009) concluded that the student nurses' self-confidence was increased with a simulation experience in school. The researchers did recommend that the measurement of self-confidence after real world experiences would be beneficial to study in the future. Heston (2010) examined the effects of simulation as compared to conventional teaching methods in a sample of first-year associate degree nursing students. The lecture and simulation experiences covered the same content. In this causal-comparative design using quantitative questionnaires, Heston (2010) found no significant difference between simulation and conventional teaching styles on the self-confidence of the nursing students. This result is consistent with some of the other reports found in the literature and supports the concept that review of information by simulation or conventional methods can increase self-efficacy.

Age was a predictor for academic performance in a study that examined the relationships of self-efficacy, stress, learned resourcefulness, and demographics of nursing students. Goff (2011) conducted a quantitative study in an undergraduate degree program. Self-efficacy, stress, and resourcefulness were measured with validated and reliable tools. Results indicated that students' lack of self-efficacy and academic performance in school was related to learned resourcefulness throughout the academic experience, as well as the students' age (Goff, 2011). Goff proposed that to increase student self-efficacy in a program it is necessary for advisors to guide students throughout the degree process in order for the students to become resourceful in the

navigation of stress. Many variables may relate to self-efficacy; this study revealed the influence of education and demographic variables.

Norgaard, Ammentorp, and Kyvik (2012) measured self-efficacy before and after an educational offering on communication among various professionals who need to work as a team. The training consisted of communication scenarios among healthcare providers. The researchers found that training improved communication self-efficacy among physicians, nurses, and nursing assistants (Norgaard et al., 2012). This study showed increased self-efficacy occurs with practice.

Meecham, Jones, and Valler-Jones (2011) developed a questionnaire quantifying students' confidence during acquisition of clinical skills in undergraduate education. Confidence has been suggested to be an element of self-efficacy in the literature (Townsend & Scalan, 2011). The students' confidence scores were then compared throughout their undergraduate career. Meecham et al. concluded that increased confidence of the students occurred with increased exposure to skills.

In a qualitative study, Neal (2008) examined the relationship of self-confidence and self-efficacy in her research. The researcher focused on graduate nursing students in a nurse practitioner program. The results suggested that the mentorship relationship experienced in the clinical setting enhanced the students' self-efficacy and self-confidence in assessment skills and transition in the new role. The role of mentor includes positive reinforcement of successes for the student and the added stress of performing in front of a novice requiring the knowledge of best practices. Mentorship has

also been linked to self-efficacy in the undergraduate student (Chesser-Smyth & Long, 2013; Goff, 2011; Messner, Jones, & Taylor, 2004).

Twibell et al. (2008) examined self-confidence and self-efficacy in nurses during a resuscitation of a patient while the family was at the bedside. The researchers evaluated variables such as nursing certification, level of education, practice area, and years of experience. They developed their own quantitative tools to evaluate the nurses' confidence. They discovered that nurses' self-confidence in regards to family presence was positively related to nursing certification practice area, specifically the emergency department. The findings of Twibell et al. correspond to Knudson's (2013) assertion that nursing certification is related to the practitioner's commitment to quality care and improved patient outcomes.

Throughout the literature, Bandura's model of self-efficacy has been widely studied. One of the measures of a valid theoretical framework is whether or not it can be quantified and examined over many populations. Within this review of literature, the social learning theory and the aspect of self-efficacy has been shown to be measurable and influenced by many factors, including skill practice, knowledge, nursing certification, and years of experience.

Past experiences are either positive or negative, and the process of learning from those past experiences will affect self-efficacy of future experiences. The greater the exposure to the experience, the greater was the level of self-efficacy. Throughout a nurse's professional career there will be experiences that must be evaluated and reflected

on to increase learning and improve performance in the work place (Sitzman & Ely, 2011).

The review has included literature about self-efficacy and self-confidence among different populations of health care providers caring for different patient populations. Quantitative and qualitative research articles for a comprehensive review were included. Many of the researchers examined variables in their studies that may affect self-efficacy and self-confidence. They discovered that such variables as years of experience, nursing education, and professional certification may impact nurses' self-efficacy and self-confidence.

Implications

The literature review supports practice of the knowledge and skills as a way to increase self-efficacy or self-confidence in emergency settings. If a nurse caring for pediatric patients does not have practice in emergency situations, the nurse may not have high self-efficacy to perform in these situations. This lack of self-efficacy can affect performance and patient outcomes. Self-efficacy includes a personal belief that one can succeed. It is impacted by history, experience, and knowledge. The goal of the learner is to participate in activities that will assist in achieving outcomes set by the learner. The learner is accountable for his or her own learning (Erlich & Russ-Eft, 2011) and the nurse's self-efficacy is influenced by the feelings experienced when he or she is able to perform successfully. Professional nurses have the drive to learn. Compassion for their patients encourages them to achieve their optimal level of performance in all aspects of care, including emergencies. Past experiences are either positive or negative, and the

process of learning from those past experiences will affect self-efficacy regarding future experiences (Bandura, 1993).

Given the infrequency of pediatric emergencies, nurses have few instances to hone their skills. The results of this study could possibly inform a program of professional development and education provided throughout the year for staff caring for pediatric patients. The current study may support the provision of a comprehensive review of knowledge and skills through a series of simulation experiences in the simulation lab or as mock emergencies in the different areas in which the pediatric patients are served. This study may support the implementation of a rapid response team for the pediatric patient. With support from hospital administration, it may be possible to provide additional educational exercises convenient to the staff.

Improving outcomes in the local community hospital improves the lives of families in the community. The implications of this study include the assessment of self-efficacy issues in nurses when performing pediatric emergency care. It was also important to determine if there was a relationship among knowledge, years of experience, years of caring for pediatric patients, degree in nursing, pediatric life support certification, certification in specialty, and self-efficacy of nurses who cared for pediatric patients. Social change will be seen as improving the care provided in the local setting, and improving the medical care delivered in the community.

Section 2 includes the quantitative design chosen for this study, the instruments to be utilized, and the analysis of data. In addition, the procedures for the protection of human subjects are reviewed.

Section 2: The Methodology

Introduction

The purpose of this study was to determine if there was a relationship among nurses' knowledge of pediatric emergency care, years of clinical experience, years of caring for pediatric patients, pediatric life support certification, specialty certification, and education level, and their self-efficacy in pediatric emergencies. In addition, the research questions guided the investigation to determine if any of the variables predicted nurses' self-efficacy in pediatric emergencies. The evidence of a problem existed at the local and the professional level. The nurse's level of self-efficacy may be related to performance (Bandura, 1982) in pediatric emergency situations. Bandura (1982), in his theory of learning, discussed low self-efficacy as an impedance to perform competently. Competence is a key component of quality patient outcomes and care for pediatric emergency situations not frequently encountered. Information on self-efficacy of nurses caring for pediatric patients in the community hospital provided data to improve competency and patient care delivery. Staff nurses and key stakeholders are dedicated to achieving positive patient outcomes.

Research Design and Approach

The research design was a quantitative correlational survey design. This design was chosen to explore the problem that had been anecdotally described to me by key stakeholders. A correlational design is utilized when a relationship may exist between two or more variables (Giuliano & Polanowicz, 2008). The correlational design chosen for this study was an explanatory research design. The survey data were collected as a

snapshot in time. All participants belonged to one group of nurses who cared for pediatric patients. The participants in this study were not changed; they were being examined as they presently existed (Creswell, 2012). The variables measured included self-efficacy, nurses' knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, and years of education. The characteristics described were all part of the explanatory design.

Setting and Sample

The setting was a suburban community hospital in the northeast United States that has a pediatric emergency room, a pediatric intensive care unit, and a pediatric unit. Within the hospital, there were radiology and outpatient services also caring for pediatric patients requiring testing and surgery. The pediatric specialty center included subspecialists in the areas of cardiology, endocrinology, gastroenterology, neurology, and pulmonology.

I used a convenience sample for the study. Nurses were invited to participate if they worked in any areas within the institution where care is provided for pediatric patients. There were approximately 300 nurses who cared for the pediatric population in the hospital and the full census were eligible to participate. All of these nurses were invited to be participants in the study. I personally asked eligible nurses to complete a questionnaire packet and I left information and packets at the nurses' stations. The packet included a cover letter as well as demographic, self-efficacy, and knowledge questionnaires (Appendices B, C, D, and F). Information about the purpose of the study was included in the packet, as was notice that their consent to participate in the study was

assumed if they returned the completed questionnaires. No identifying information was collected and anonymity was protected.

In a power analysis to determine the necessary sample size, the power needed to reject the hypothesis when it is false was set at .80. The level of significance was set at $p = .05$. The effect size was set for educational research at 0.5 (Cohen, 1992). Six predictor variables were included in the power analysis. With all of these considerations, achievement of a power of .80 was expected if 48 completed surveys were returned. This return was a computation of power using GPower3.1 for correlation and regression analysis (Faul, Erdfelder, Buchner, & Lang, 2009).

Instrumentation and Materials

All participants received a cover letter (Appendix B) with a packet of questionnaires to complete. One questionnaire included demographic information such as gender and age (Appendix C). Interval-level data collected on the demographic questionnaire included the participant's years of nursing education, years of caring for pediatric patients, years of pediatric life support certification, years of specialty certification, and years of clinical experience.

Another questionnaire measured self-efficacy of nurses. The General Self-Efficacy Scale (GSES) is a 10-item scale that was designed to measure an individual's belief of how well he or she copes with a challenging situation (Appendix D). The scale was developed by Schwarzer and Jerusalem (1995), originally in the German language, and has been translated and used in many studies with hundreds of thousands of participants in different countries including the United States. The Cronbach's alpha for

the GSES ranged from 0.76 to 0.90 in samples from all over the world (Schwarzer & Jerusalem, 1995). The self-efficacy questionnaire was comprised of 10 Likert-type scale questions developed for the general adult population. Responses were made on a 4-point scale ranging from 1 (*not at all true*) to 4 (*exactly true*) and the sum of the responses to all 10 items yielded the final composite score with a range from 10 to 40. The level of measurement of this tool was interval/ratio. Permission to use the scale for this research was obtained (Appendix E).

Finally, knowledge of pediatric emergencies (Appendix F) was measured with a tool I developed that included multiple-choice and true-false questions (Appendix F). Content validity of the tool was evaluated by five pediatric nursing experts. The experts had multiple years of nursing pediatric critical care experience or nursing pediatric emergency room experience. Cronbach's alpha was computed at 0.812. There were 32 items and the number of correct responses was the total score, with a possible range from 0 to 32 (Appendix F). The level of measurement of this tool was interval/ratio.

Data Collection and Analysis

I presented information about the proposed study to the nursing staff of six units and asked for voluntary participation. Subsequently, 100 questionnaires and instructions were placed in envelopes in a box on each of the units. I visited the specialty care center, ambulatory surgery unit, post-anesthesia care unit, emergency room, pediatrics, and pediatric intensive care unit over the course of the 4 weeks of distribution. I looked in the boxes; if the boxes still had questionnaires I did not add to them. I frequently reminded the staff on each unit to answer the questionnaires. Another box for completed

questionnaires was left at the nurses' station in each unit. A colleague made rounds each day to collect the questionnaires. As the questionnaires were returned, the envelopes were given a number and they were placed in a safe to which only I have access.

Each questionnaire was given a number when entered into the data base. Analysis was performed on the data using computerized statistical software, SPSS version 22 (SPSS, 2011). To answer Research Questions 1 and 2, the interval/ratio level variables of knowledge, years of clinical experience, years of nursing education, years of pediatric life support certification, years of caring for pediatric patients, and years of specialty certification, were analyzed using multiple regression to determine their relationship to self-efficacy (Giuliano & Polanowicz, 2008). Regression coefficients for all six independent variables and the R squared value were calculated. Significance was accepted as $p < 0.05$.

The demographic information of gender, age, certification of pediatric life support, specialty certification, and years of education were analyzed to describe the sample by using descriptive statistics. These descriptive data were presented in a table format. An additional analysis was completed using correlation analysis.

The research questions and hypotheses posed in this study were:

Research Question 1*:* What are the relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies?

$H_0$1: There are no significant relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

H_a1: There are significant relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

Research Question 2: Which of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients significantly predicts self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies?

$H_0$2: None of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients predict self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

H_a2: At least one of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support

certification, years of specialty certification, or years of caring for pediatric patients significantly predicts self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

Data Analysis Results

The purpose of this study was to determine if there were relationships between nurses' self-efficacy in pediatric emergencies and their knowledge of pediatric emergency care, as well as their years of clinical experience, nursing education, pediatric life support certification, specialty certification, and caring for pediatric patients. In addition, the research questions guided the investigation to determine if any of the variables predicted nurses' self-efficacy in pediatric emergencies. Data were collected in a suburban community hospital. One hundred surveys were distributed among the units. Given that 37 surveys were returned, there was a 37% return rate of surveys taken by eligible nurses.

The data were analyzed using multiple regression to determine the relationships and predictability among the variables. To answer Research Questions 1 and 2, the interval/ratio level variables of knowledge, years of clinical experience, years of nursing education, years of pediatric life support certification, years of caring for pediatric patients, and years of specialty certification, were analyzed using multiple regression to determine their relationship to self-efficacy (Giuliano & Polanowicz, 2008). An additional analysis was completed using correlation analysis.

Characteristics of the Participants

As shown in Table 1, the results of the analysis of the demographic questionnaires indicated that all but one participant were female (97%). The mean age was 47 years with the median age being 50 years. Eleven participants (29.4%) had associate degrees, 24 (62.2%) had bachelor degrees, two (5.4%) had a master's degree, and one (2.7%) had a doctorate. Mean years of experience was 22.79. The mean years of pediatric experience was 17.92 and mean years of PALS certification was 13.18. Thirty-six (97%) were certified in PALS (Table 1).

Table 1

Demographic Characteristics of Participants in the Study Sample

Characteristic	*N*	(%)	Mean	*SD*	Min.	Max.
Age			47.20	9.70	26	67
Gender						
Male	1	(3.0)				
Female	36	(97.0)				
Years of experience			22.79	10.60	1	43
Years of pediatrics			17.29	10.20	0	43
Years nursing education			3.43	1.55	1	8
Years of certification			5.62	6.40	0	22
Years of PALS			13.10	6.89	0	30
Certification						
Yes	21	(56.8)				
No	16	(43.2)				
Certification specialty						
Pediatrics	10	(27.0)				
NICU	1	(2.7)				
Perianesthesia	2	(5.4)				
Ambulatory	7	(18.9)				
Radiology	1	(2.7)				
Number of certifications						
0	16	(43.2)				
1	19	(51.4)				
2	2	(5.4)				
PALS certification						
Yes	36	(97.0)				
No	1	(3.0)				
Degree						
AA	11	(29.7)				
Bachelor's	23	(62.2)				
Master's	2	(5.4)				
Doctorate	1	(2.7)				
Self-efficacy score			31.76	3.50	27	40
Knowledge score			25.51	2.16	21	31

Self-Efficacy Questionnaire

The self-efficacy questionnaire was administered to the staff. The highest score possible was 40, meaning the respondent has a high level of self-efficacy. The lowest possible score was 10, indicating a low level of self-efficacy. Of the nurses who responded, the mean self-efficacy score was 31.75 and the median was 30. The participants had a moderate self-efficacy score for pediatric emergencies.

Knowledge Test

The knowledge test I developed was derived from the fundamental tenants of pediatric advanced life support. Cronbach's alpha was 0.812. The highest score possible was 32. The scores of the nurses in the study ranged from 21 to 31 on the knowledge test. The mean was 25.51 and the median was 25.

Multiple Regression Analysis of Independent and Dependent Variables

A standard multiple regression was performed with self-efficacy as the dependent variable. The independent variables were nurses' knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients. Assumptions were explored and analysis was performed using SPSS version 22. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.681.

The partial regression plots showed an approximately linear relationship between self-efficacy and all the other variables. The assumption of homoscedasticity was met, as the spread of the residuals did not increase or decrease with movement across the predicted values. In order to identify possible multicollinearity, I inspected correlation

coefficients and tolerance/variance inflation factor (VIF) values. None of the independent variables had correlations greater than 0.7. All of the tolerance values were less than 0.1, and therefore all the VIF values were greater than 10, so multicollinearity was not identified (Pearson, 2010). Outliers, high leverage points and highly influential points were not found. The assumption of normality of the residuals was checked with a histogram with a superimposed normal curve and a P-P Plot, both of which showed normality. No cases had missing values, $N = 37$.

A regression analysis of self-efficacy was conducted with nurses' knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients as the six predictors entered simultaneously as one block. None of the variables demonstrated a statistically significant prediction of self-efficacy, $F(6, 30) = 1.47$, $p = .222$, adjusted $R^2 = .073$. Adjusted R^2 is an estimate of the effect size (Pearson, 2010), which at 0.073 (accounting for 7.3% of the variance), indicates a small effect size, according to Cohen's (1988) classification. No cases had missing values, $N = 37$. The results of this analysis are presented in Table 2.

Table 2

Regression Results of the Dependent Variable Self-Efficacy Versus the Predictor Variables

Model	Sum of squares	*df*	Mean square	*F*	*p*
Regression	103.417	6	17.24	1.47	.222
Residual	351.39	30	11.71		
Total	454.81	36			

a. Dependent variable: self-efficacy
b. Predictors: (Constant), knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients

None of the independent variables contributed significantly to the variance in self-efficacy. Table 3 displays the correlations between the variables, the unstandardized regression coefficients (*B*) and the intercept, the standardized regression coefficients (ß).

Table 3

Results of the Regression Analysis Examining the Contributions of the Independent Variables to Self-Efficacy

Variable	*B*	*SE*	β	*t*	*p*
Knowledge	.135	.297	.082	.453	.645
Yearsclinicalexperience	-.140	.081	-.420	-1.74	.092
YearsPALS	-.023	.123	-.045	-.186	.854
Yearscertified	.089	.113	.160	.782	.440
Yearsofnursinged	.587	.417	.257	1.41	.170
Yearscaringforpeds	.116	.084	.334	1.38	.178

Adjusted R^2 .073, $p = .222$, $N = 37$

Additional Analysis

Correlation coefficients were computed among the variables. Five of the correlations were statistically significant at the 0.05 level and were greater than or equal to .327. Years of certification correlated with years of clinical experience. Years of pediatrics correlated with years of nursing education. Self-efficacy correlated with years of nursing education. Additionally, knowledge correlated with years of PALS. Four of the correlations were statistically significant at the 0.01 level and were greater than or equal to .448. Years of PALS was found to correlate with years of pediatrics. Years of clinical experience correlated with years of certification. Finally, years of pediatrics correlated with years of clinical experience (Table 4).

Table 4

Correlations Among the Independent Variables and Self-Efficacy

	Yrs Prac	Yrs Peds	Yrs NEd	Yrs Cert	Yrs PALS	Knowledge
Yrs Prac						
Yrs Peds	.694**					
Yrs NEd	-.088	-.008				
Yrs Cert	.404*	.403*	.327*			
Yrs PALS	.615**	.645**	.078	.448**		
Knowledge	.186	.210	.204	.022	.361*	
Self-Eff	-.158	.093	.356*	.190	.034	.114

**Correlation is significant at the 0.01 level (two tailed)

*Correlation is significant at the 0.05 level (two tailed)

Summary of Results

The problem that generated this study was the reported lack of confidence in the practice of pediatric emergency skills, which was thought to possibly lead to poor performance in pediatric emergency situations. The self-efficacy concept relates to the nurse's belief of how well he or she can perform in an emergency event. The results showed that self-efficacy could not be predicted by nurses' knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients. The variable that approached significance (p = .092) in the regression

model was years of experience. This indicated that as years of experience increased, self-efficacy decreased. This result was unexpected, and could be explored in future research. A possible explanation for the lack of statistical significance could be that the sample size was small, or too many variables were entered into the regression model. In an effort to get the sample size needed, I returned to the units multiple times to ask staff to fill out the questionnaires for the self-efficacy study. With more participants ensuring greater power, the regression model might have been significant. However, results showed a small effect size, so increasing the sample may not have yielded significant results. It may be that the variables selected are poor predictors of self-efficacy, and other variables that were not included in the study may better predict self-efficacy.

The research questions and hypotheses posed in this design and the results are:

Research Question 1*:* What are the relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies?

The analysis showed that there was a positive correlation between knowledge and years of PALS, years of certification and years of experience, years of pediatric experience and years of nursing education. There was a positive correlation between years of pediatric experience and years of experience. Additionally, there was a positive correlation between self-efficacy and years of nursing education.

$H_0$1: There are no significant relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, and years of caring for pediatric patients, with self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

The null hypothesis was partially supported. With the correlation analysis, the only significant relationship found with self-efficacy was years of nursing education. There were no significant relationships among the other variables.

H_a1: There are significant relationships among knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, and years of caring for pediatric patients, and self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

This hypothesis was partially supported. The correlations showed that self-efficacy was significantly and positively related to years of nursing education.

Research Question 2: Which of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients significantly predicts self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies?

The regression analysis showed that none of the variables predicted self-efficacy.

$H_0$2: None of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients predict self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

The null hypothesis was not rejected. The regression analysis showed that none of the variables predicted self-efficacy.

H_a2: At least one of the variables of knowledge of pediatric emergency care, years of clinical experience, years of nursing education, years of pediatric life support certification, years of specialty certification, or years of caring for pediatric patients significantly predicts self-efficacy in nurses who care for pediatric patients regarding pediatric emergencies.

This hypothesis was not supported. The regression analysis showed that none of the variables predicted self-efficacy.

The theory influencing this study was Bandura's social learning theory. This theory describes functioning elements that affect a person's ability to perform, and his or her self-efficacy, which include cognitive, motivational, affective, and decisional factors (Caprara et al., 2008). Self-beliefs of efficacy and professional motivation are intertwined (Bandura, 1993). The results of this study did not show that knowledge was a predictor of self-efficacy. Years of specialty certification, which is a measure of professional motivation, was also not a predictor of self-efficacy. The significant relationship found in

the correlation analysis between self-efficacy and years of nursing education may reflect Bandura's tenet that self-efficacy is related to cognitive factors and practice over time.

The nonsignificant results of this analysis may have been due to the inability to collect the 48 questionnaires indicated by the power analysis. I only received 37 after numerous reminders. I may have overestimated the number of individuals who cared for pediatric patients due to cut backs that have occurred in the institution. Another reason for the low sample size may have been a lack of interest from the staff to participate in a study. The results did not match the anecdotal evidence that I received from the staff and key stakeholders who said that the staff lacked confidence to perform well in a pediatric emergency. This incongruity may be due to the difference between what is measured on paper and what occurs in an actual emergency situation.

Based on the results of the study, an educational project was developed to increase knowledge of pediatric emergency care through continuing education of the staff. The correlations showed that there was a positive relationship between knowledge and years of PALS, years of certification and years of experience, years of pediatric experience and years of nursing education. There was a positive correlation between years of pediatric experience and years of experience. Additionally, there was a positive correlation between self-efficacy and years of nursing education. With these in mind, the project was developed to include didactic and practice sessions as continuing education for pediatric emergencies.

Assumptions, Limitations, Scope, and Delimitations

Assumptions

I assumed that the nursing staff would take participation seriously, would provide honest answers, and would take the time necessary to thoroughly read and respond to the questionnaires. I assumed that the participants did not look up the answers to the knowledge test and that they trusted their identity was protected and there were no repercussions related to the results of this study. I assumed that all questions were completed by all participants. Finally, I assumed that there would be a high return rate on the questionnaires in all areas of the hospital in which pediatric patients are treated.

Limitations

A potential weakness of the study lies in the multiple variables that were uncontrollable. Another possible weakness was the small number of questionnaires that were returned, diminishing the power of the study. Because a convenience sample was used, and the design was not an experimental design, this study was limited in terms of its generalizability to the total population of nurses that respond to pediatric emergencies. Extrapolation of the data to a larger population in an academic university institution was not possible.

Scope and Delimitations

The boundaries of the study were the location. The questionnaires were distributed to nurses in a community hospital in a suburban area. Observation and measurement of actual performance in pediatric emergencies was not feasible for this study given the infrequency of occurrence.

Participant Protection

The participants were anonymous. The questionnaires were placed on the nursing units and had no identifiable information. A letter detailing the goal of the research accompanied each questionnaire. This informed the participants of their anonymity and the freedom of choosing not to participate without fear of reprisal. The participants were informed that filling out the questionnaires was their consent to participate in the research. The returned questionnaires were kept in a locked secured safe for a period of 5 years. Only I possessed the key. No other person had access to the information. IRB approval was obtained from the local institution (15-002) and Walden University (03-09-15-0237286) before the study was undertaken.

Conclusion

Methodology, statistical analyses, and the means for participant protection and selection were chosen carefully for this descriptive analysis of the problem. The chosen tools to quantify the relationship included a valid and reliable tool to measure self-efficacy and a valid and reliable pediatric knowledge questionnaire that I developed. The purpose of this study was to determine if there was a relationship among nurses' self-efficacy regarding pediatric emergency care, and their knowledge, clinical experience, certification, and education level. In addition, the research questions guided the investigation to determine if any of the variables could predict nurses' self-efficacy in pediatric emergencies. Statistical analyses were performed to explore the relationship of these variables. While none of the variables were found to predict self-efficacy, significant positive correlations were found between knowledge and years of PALS,

years of certification and years of experience, years of pediatric experience and years of nursing education. There was a positive correlation between years of pediatric experience and years of experience as well as a positive correlation between self-efficacy and years of nursing education. Results from this study provided the basis for targeted interventions designed to bolster knowledge of the nurse caring for pediatric patients, no matter where they are assigned in the hospital.

Section 2 included the methodology for the study. I discussed the study design, selection of subjects, data collection, and data analysis. The results of this study are clearly delineated in Section 2. Tables depicting the results were included. Project plans resulting from the data are explained in the next section.

Section 3: The Project

Introduction

Results of the research study demonstrated significant positive correlations between knowledge and years of PALS, years of certification and years of experience, years of pediatric experience and years of nursing education. Additionally, there was a positive correlation between years of pediatric experience and years of experience, as well as a positive correlation between self-efficacy and years of nursing education. Based on these findings, the project developed is a 3-day educational workshop designed to enhance nurses' knowledge and skills related to pediatric emergencies. The goals of this workshop are to improve knowledge of pediatric emergencies, improve self-efficacy in the practice of pediatric emergencies, and to provide hands-on practice for responding to pediatric emergencies. This plan includes didactic presentations, pre-tests and post-tests for assessment, and practice scenarios. The genre of this project is professional development and training curriculum and materials.

Incorporating the concepts of the educational theorist Kolb (1984), the project includes practice situations to increase self-efficacy related to pediatric emergencies. Nurses received continuing education credits for their participation, because these credits are part of the requirements for certification in specialty areas. Using continuing education credits is an excellent motivational tool, and it supports Bandura's (1993) and Knowles' (1989) educational philosophies, which posit that adult learners need to gain something by the instruction. Kolb's theory includes multiple learning modalities for the adult learner, which is addressed in this project. A safe environment and reflection are

additional components of Kolb's learning theory and they are included in the 3-day workshop.

The mission of the 3-day pediatric emergency review is to improve the self-efficacy of all nurses caring for pediatric patients regarding pediatric emergencies. The goal of the 3-day workshop is to familiarize the nurse with the care of the pediatric patient experiencing an emergency, as well as reviewing the types of emergencies and the equipment to care for the pediatric patient in an emergency. The target audience is composed of nurses in the institution who care for pediatric patients in their practice.

The learning objectives of the 3-day educational workshop are as follows. Upon completion, the learner will be able to:

1. Identify a respiratory emergency in a pediatric patient.
2. Intervene in a respiratory emergency using evidence-based practices learned in the review.
3. Identify a cardiac emergency in a pediatric patient.
4. Intervene in a cardiac emergency using evidence-based practices learned in the review
5. Identify a shock emergency in the pediatric patient.
6. Intervene in a shock emergency using the evidence-based practices reviewed in class.

Rationale

The educational plan was developed in response to the findings of the study. As years of nursing education, years of a pediatric advance life support, and years of practice

were all significantly correlated with knowledge, increasing knowledge through education was chosen. As knowledge was correlated with years of PALS, additional education and review of pediatric advance life support concepts will enhance the skills of the nurses. The local staff have suggested that AHA offerings are not enough education for emergency situations in the pediatric population. In a study reported in an international journal, nurses practicing in pediatrics reported a lack of educational offerings as well as an increase in patient acuity and required care (Green et al., 2014). The proposed program would address this lack of available education and provide a workshop on emergency procedures tailored to the pediatric patient.

Literature Review

The review of the literature was conducted electronically, using search engines such as CINAL, Medline, ERIC, and Proquest. Key words in the literature searches included *curriculum development, teaching methods, simulations, adult education, nursing education, Kolb's experiential learning theory, experiential learning, reflection, discussion, didactic,* and *pediatric nursing research*. Current articles and studies of the past 5 years were selected for their relevancy. The project was developed from the research results using concepts found in the review of the literature.

Kolb's Theory of Experiential Learning

The educational theory that has informed this project is Kolb's (1984) theory of experiential learning. In Kolb's learning theory, knowledge is gained by experiences. Kolb believed that a learner must experience, reflect, think, and act, in order to gain knowledge in an educational offering (Kolb, 1984). His major concepts include concrete

experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, Baker, & Jemsem, 2002). Concrete experiences are generally the experiences that are in the classroom. This is learning that occurs when the teaching strategies include PowerPoint presentations, class readings, observations, examples, problem sets, and written assignments (Mobbs, 2015). Reflective observation occurs when the student examines his or her own performance and reviews what was done well and what needs more work. Strategies can include "logs, journals, discussion, brainstorming, thought questions, and rhetorical questions" (Mobbs, 2015, p. 1).

Abstract conceptualization enables a participant to understand an event and interpret evolving relationships (Mobbs, 2015). While learning, students use theory from other sources to which they have previously been exposed. They also use models they have used in the past, or ideas from other students or teachers. Students also use observations and knowledge from their learning history (Mobbs, 2015). Teaching strategies include lectures and written assignments. Active experimentation describes when concepts learned are then put into practice by the learner in a new situation such as when the student participates in an activity with other learners. Projects, fieldwork, homework, case studies, and simulations are teaching strategies that are included in active experimentation (Mobbs, 2015). Simulation is an excellent example of active experimentation, where students can freely experiment with performing roles in a safe environment.

Roessger (2014) investigated the learning styles of adult learners using Kolb's theory. He found that the reflective process can be difficult for some learners. This

process may cause anxiety for the learner and halt knowledge acquisition. The reflective process must be in an environment that is safe to the learner (Roessger, 2014). Chan (2012) conducted a qualitative study of students in China in which the students participated in a community activity and then were engaged in reflection. The researcher found that Kolb's learning theory was supported in reinforcing knowledge acquisition.

Young and Collins (2014) and Lamm et al. (2011) found Kolb's theory to be instrumental in their work. Young and Collins conducted a mixed methods study design for teachers new to music instruction and Lamm et al. examined experiential learning with agricultural students. Both found that mixed teaching styles, as well as reflection, were instrumental to learning. In both studies, students learned concrete information, and then were sent out to teach or to do community service. Their learning occurred with reflection after the experiences (Lamm et al., 2011; Young & Collins, 2014). Chan (2012) also found in his study of engineering students that the classroom didactic and experiential learning are complimentary to each other. In this research, engineering students were sent out to a community after an earthquake, and their post qualitative interview sessions revealed how much they valued the out-of-classroom experience. The students were able to apply concepts learned in the classroom, and to individualize their experiences (Chan, 2012). The classroom discussion is an additional technique that Kolb discussed in 2002. During classroom discussion, learners transformed the meaning of their experiences (Kolb, Baker, & Jemsem, 2002).

Russell-Bowie (2013) researched the confidence level of teachers asked to teach music, even though they were not music teachers. The teachers had incorporated Kolb's

learning theory in the design of the instructional experience. In a mixed method design, the researchers found that 67% of students in the study found the lecture participation to be beneficial, 84% found concrete experiences to be beneficial, and 60.7% found completing quizzes to be beneficial. When it was time for the qualitative discussions, the researchers found that reflective learning was a common thread (Russell-Bowie, 2013). Redcross (2015) also found that students in an undergraduate setting wanted real world experiences instead of text book memorizations. Green and Ballard (2011) used Kolb's learning theory to prepare teachers, and they found the four stage process of concrete experience, reflective observation, abstract conceptualization, and active experimentation to have a positive effect on learning and preparation for the student interns. In their qualitative interviews, the reflective and experiential elements of the offering were the strongest emerging themes (Green & Ballard, 2015).

Meeting the Demands of Healthcare

In the landmark report, The Future of Nursing (Institute of Medicine, 2010), sponsored by the Robert Wood Johnson Foundation, it was reported that the care for patients is becoming more complicated and, therefore nurses need additional education to be prepared to meet the needs of the patients. This report informed this project regarding the need for continuing nursing education. Education designed to increase the knowledge, critical thinking, and skill of nurses in complex situations is essential to the proficient care of patients (Rosseter, 2014).

In a study discussing the future goals of pediatric nursing research (Green et al., 2014), the researchers polled nurses from across the country and internationally. The

nurses in practice identified care issues as an increasing patient acuity and care burden, and cited a lack of pediatric preparation and educational programs. Increasing educational activities as the proposed project does for the staff of this community hospital would be in line with outcomes of this research.

Professional Development and Training Curriculum

Many researchers have discussed the need for a professional development and a training curriculum that addresses how best to instruct the professional. Adult learners require course content that reflects the real world (Giles, 2012). Lane and Mitchell (2015) discussed the use of evidence and simulation in their curriculum development for nursing students. Greenfield et al. (2013) discussed how narrative discussion of events gave professional physical therapists the ability to be reflective about their practice. Case-based learning that enhances discussion increases deep learning. Surface learning would include only didactic instruction. Transference of knowledge is the goal of adult learning, where the learner moves to the clinical setting and performs appropriately (Taylor & Hamdy, 2013).

Coaching was a strategy used in Ammentorp, Jensen, and Uhrenfeldt's (2013) qualitative study of health care professionals. They found that coaching sessions gave the professional a new vision for his or her work. Craddock, O'Halloran, McPherson, Hean, and Hammick (2013) discussed many themes of educators in their qualitative research on curriculum development. One such theme was to include case-based learning or problem-based learning for the adult learner. In a mixed qualitative and quantitative study, the researchers found participation, respect, collaboration, and critical reflection to be key

elements for adult learning (Madsen, O'Mullen, & Keen-Dyer, 2014). In an examination of adult learning theories, an informal learning environment was most effective with adult learners (Sandlin, Wright, & Clark, 2013). In another qualitative study of adult learners in nursing school, the researchers found that the learners wanted to express their input in the course of study (Robert, Pomarico, & Nolan, 2011).

Learning Modalities in Curriculum Development

Simulation. Simulation has been discussed in the literature as a way of teaching the adult learner. Simulations are used to represent the real world experiences (Kolb, 1984). In simulation, the learner is able to immerse him or herself in the real life scenario. The student can identify his or her role in the situation and experiment with other roles during the situation (Misfeldt, 2015).

Simulation has been used in pediatric healthcare education to a great extent. Lopreiato and Sawyer (2015) reported on behalf of the Pediatric Academic Association that pediatric educators and researchers of simulation have been at the forefront of simulation education (Lopreiato & Sawyer, 2015). Even though through simulation, students and faculty have reported positive learning (Bultas, 2011; Darcy-Mahoney, Hancock, Iorianni-Cimbak, & Curley, 2013; Shin & Kim, 2014), one of the major limitations of simulation is that it may not closely portray real life situations (Beauchesne & Douglas, 2011). Simulation has been integrated in adult education in many venues as a tool developed to move from critical thinking to clinical reasoning (Benner, Kyriadedes, & Stannard, 2010). Using simulation, a nurse is able to reason through a clinical situation while performing care. When first introduced, the main goal of simulation in nursing was

to teach skills. Now the goal is to teach prioritizing and clinical judgment. Simulation must start with a plan, then follows the simulation, debriefing, and the transfer of knowledge to the clinical setting (Dunnington, 2014).

A yearlong study was conducted with nursing staff in a pediatric cardiac intensive care unit that presented challenges of a busy, high-acuity unit and difficulty with determining how to teach the staff. The researchers' solution was to plan simulations off site, away from the unit, and to complete this education each year as a competency. Staff reported that they learned the skill, and the educational sessions were helpful to their practice (Kane, Pye, & Jones, 2011). In another study, a researcher used observations of nursing students in a clinical area completing a respiratory assessment after they had participated in a simulation. The researcher discovered that transfer of learning had been achieved (Kirkman, 2013).

Much of the simulation literature is concerned with nursing student education (Goodstone et al., 2013; Lasaster, 2011). Shin and Kim (2014) used simulation as a form of increasing student nurses' critical thinking skills. Using a one group pre-test and post-test design, the researchers found simulation in nursing education to be effective in increasing critical thinking. Two studies were conducted to use simulation in nursing student education as a way to expose the student to infrequent events, not seen in clinical rotations (Harris, 2011; Parker et al., 2011). Both researchers found simulation increased confidence, but the effect on test scores was inconclusive. Another researcher used simulation to expose the student nurse to end of life issues in the pediatric population (Lindsay, 2011). She found that learning not only occurred during the simulation but also

during the debriefing. Norman (2012) conducted a systematic review of simulation literature and found inconsistent results of positive or negative outcomes. This may be because simulation is operationalized in inconsistent and varying formats.

Different simulation practices were compared in one study. The researchers used two types of simulation; one was computer-based and the other was a human patient simulation. The computer-based simulation was focused on the electronic medical record. The students viewed documentation in the record and were expected to plan interventions. The patient simulation was in the simulation lab with a manikin. The researchers found that there were greater diagnostic reasoning skills demonstrated when the participants were in the simulation lab (Wilson, Klein, & Hagler, 2014). A similar study found that students were able to make correct clinical decisions 51% of the time (Shelestak, Meyers, Jarzeinbak, & Bradley, 2015).

Simulation has been used in PALS for years; one group of researchers found that the practice of skills increased retention of information for up to 6-months, increased skill performance, and increased confidence (Lindemood & Weinstock, 2011). Schubert (2012) examined simulation as a tool to expose practicing nurses to infrequent events. She found that the nurses' knowledge was increased by 11% in her study at a large Midwestern United States hospital. Another researcher used simulation to train operating room nurses how to respond to events that were unlikely to occur (Corrigan, 2013). Simulation improved central line maintenance in a pediatric intensive care unit (Hebbar, Cunningham, McCracken, Kamat, & Fortenberry, 2015). Simulation was also used as a tool to teach and have the staff explore their feelings regarding family presence at a

pediatric emergency (Pye, Kane, & Jones, 2010). In a study that surveyed nurse anesthetists' thoughts of simulation in certification and recertification, the investigators found the practicing nurses valued the use of simulation for certification. There was a significant difference in the ratings of the value of simulations for recertification in the participants that participated in simulation versus those that did not (Hawkins et al., 2014).

In a study by Sigalet et al. (2014), simulation-based education was used to teach seizure management in a pre-test post-test design measuring confidence. The researchers' sample included caregivers of a pediatric population diagnosed with seizures. The results were higher performance scores and higher self-efficacy scores in managing seizures (Sigalet et al., 2014). In a multidisciplinary simulation project, the research group used simulation to teach caregivers how to communicate to a family the death of a child. The team engaged in scenarios and participated in simulations that included interactions with family members who experienced the death of a child. The responses to the course offering were overwhelmingly positive (Youngblood, Zinkan, Tofil, & White, 2012).

Didactic instruction. Didactic education is derived from the Socratic method of teaching. In this form of education, the teacher is the authoritative figure who imparts the knowledge to the student. Didactic instruction has been fundamental to teaching. It has been discovered that didactic learning is not the only way to learn (Kolb, 1984). Alone, didactic teaching is not comprehensive. Didactic teaching along with other teaching modalities serves to give the learner the foundation of knowledge that is required in the lesson. In Horton's (2011) study of adolescent girls learning health management, she

found that didactic education along with hands-on performance increased the retention in students (Horton, 2011). Horton (2011) found that only 5% of information is retained during didactic teaching.

Didactic teaching was compared to online teaching of procedures to be used by anesthesia residents during an emergency situation. The researchers found that prior to simulation experiences, the online and didactic teaching were equally effective in delivering the fundamental information required in order to perform in the simulation (Hards, Davies, Salman, Soussi, & Balki, 2012).

The delivery and the style of the instructor is a component of affective didactic education (Melnic, 2012). When asked about teaching preferences, 91% of college students said that didactic education is best when the teacher is charismatic and well prepared (Melnic, 2012).

Discussion. Discussion is another teaching modality derived from the Socratic method of teaching. In discussion, the student is well prepared with the foundation information. The instructor facilitates a discussion between students. This method allows dialogue not only with the facilitator but also with student peers (Kolb, 1984).

Discussion is identified in the literature as an important teaching technique. In a recent study, Mathias (2015) asked pharmaceutical students to participate in discussions after a self-learning module was completed. He then asked the students qualitative and quantitative questions. The researcher discovered that the students were able to take charge of their own learning with this teaching technique. In another study where discussion and didactic teaching were compared, students reported that the facilitator of

the discussion group needed to be prepared to lead the discussion (Qamar, Ahmed, & Niaz, 2015).

In Nachal, Rajajeyakumar, and Rajendran's (2015) research on education of medical students, students enjoyed the small group discussion that reinforced didactic lectures. The researchers discovered that student communication increased, students' thought processes increased, and the groups built student-teacher relationships. Additionally, they found that 70% of the students valued the small group discussions as increasing their knowledge.

Reflection. Reflection drives the student to improve. The method of reflective teaching requires the facilitator to come prepared with questions for the students. The facilitator must ensure that the learning environment is such that the student can discuss opinions and ideas freely with the instructor and the other students. At the end of the reflective discussion, the facilitator must return to the main question and summarize the results of the discussion (Kolb, 1984). Reflection necessitates that the student thinks about a topic. In a qualitative study with medical students, when reflection was included in the course, the students reported that sharing reflections was essential to their learning experience (Tripti, Lalibhusnan, & Vedprakash, 2015).

In the literature, reflection is paired with discussion. The reflective process is often evaluated in small group discussions (Kolb, 1984). A qualitative study exploring the reflection method of teaching found these themes: it was an evolutionary process, students' spoke of bigger issues and general meaning of concepts, and there was increased dialogue (Khan, 2014). In a scholarly review, healthcare professional educators

said that reflection allows students to discuss and review issues and dilemmas after projects or clinical learning (Hatchet, Elster, Wasson, Anderson, & Parsi, 2015).

Summary

Kolb's theory of experiential learning supports the incorporation of simulation, didactic instruction, discussion, and reflection in the educational plan. Simulations are used to represent the real world experiences (Kolb, 1984). Simulation allows concrete experience through case-based scenarios. Reflective observation is seen in debriefing and in the evaluation of one's learning. Conceptualization is fostered as the learner plays a role in the scenario. This play environment allows the learner to learn through mistakes without any consequences. The active experimentation by the student is supported in a safe environment created by the instructor. The evaluation processes throughout will allow students to direct learning. The pre-tests and post-tests will make the learning goal directed for the students. They may discover their weak areas in the pediatric emergencies, and they will have the opportunity to learn how to respond in these emergencies. The debriefing, instructor evaluation of performance, and self-efficacy questionnaire will give the nurses the opportunity to reflect on the learning and performance in the scenario.

Project Description

The genre of the project is professional development and training curriculum and materials, and the educational plan is a 3-day workshop (Appendix A). The purpose of the workshop is to increase knowledge and self-efficacy in nurses who care for children in the institution. The project will also allow the nurses to practice emergency situations

and utilize pediatric emergency equipment. The goal of the 3-day review is to familiarize the nurses with the care of the pediatric patient experiencing an emergency, reviewing the types of emergencies, and reviewing the equipment to care for the pediatric patient in an emergency. Within the workshop there are pre-tests, post-tests, didactic presentations, and simulation experiences with debriefing, discussion, and reflection. The target audience for the workshop is all nurses caring for pediatric patients in the institution. It will be offered as a continuing education activity through the nursing education department. The instructor-to-group ratio is one instructor to six students, to ensure that time is available for all students to perform skills in the simulation stations.

The timeline to plan the implementation includes a discussion of the workshop offering with the director of nursing education a year prior to the first offering. Identification of the planned days for the course and booking the education classroom will be finalized at this meeting. Six months prior to the first course, I, as the coordinator will apply for the continuing education units for the year. This timeline ensures that approval from the accrediting body of the contact hours will be secured prior to the course. Instructors could include any PALS instructors, and educators from the recovery room, emergency room, and the operating room. I will select the instructors after consultation with the director of nursing education, and invite them to teach a year before the class begins. Two weeks prior to each workshop, I will meet with the instructors for approximately one hour to coordinate the workshop and ensure that everyone understands the purpose and goals of the workshop. This meeting will allow the instructors to ask any questions for clarification. The workshop will be offered three to four times in the year.

Advertising for the classes will occur 1 year, 6 months, 3 months, and 1 month in advance. The department of nursing education secretary will send emails and advertising posters out to potential students and nursing leadership.

The outline and plan for the 3-day classes are delineated in Appendix A. The classes will include a didactic review using PowerPoint slides of the basics of respiratory distress, shock, and cardiac arrhythmias in the pediatric population. The 3 days will be organized as follows: a pre-test of knowledge on topics to be covered that day, a scenario-specific self-efficacy questionnaire, didactic instruction with discussion, two scenarios (American Heart Association, 2010) with debriefing (Suskie, 2009), discussion, and reflection, and administration of post-tests of knowledge and scenario-specific self-efficacy (Appendix A).

The facility will be the nursing education classroom in the community hospital. The classroom will be set up with the simulation mannequins, both child and infant, on a large table. A pediatric code cart fully equipped with supplies and medications will be located nearby. An extra computer will be available to allow documentation in the electronic record playground, a version of the electronic record system with mock patient records that allow the users to practice documentation. The classroom will be equipped with audio-visual equipment for the PowerPoint presentations. Seating will be available for the didactic presentations with a view of the projected slides. No seats will be in the simulation area of the room in order to promote active hands-on participation. The cafeteria is open for breakfast and lunch. Rest rooms are across the hall from the classroom.

Day 1 begins in the classroom with a pre-test of knowledge of respiratory distress in children and a self-efficacy questionnaire regarding respiratory distress. The instructor will then review the fundamentals of respiratory distress in children by using the didactic PowerPoint provided. The instructor will be encouraged to use real life anecdotes reinforcing the points on the PowerPoint slides, and will encourage discussion. There is a simulation activity and a debriefing tool that fosters discussion and reflection used to finish the morning activities. After lunch, another simulation activity with a debriefing, discussion, and reflection is performed. This is followed by post-tests of knowledge and self-efficacy on the fundamentals of respiratory distress just reviewed. The equipment needed for the class will be a projector, laptop computer, access to the electronic medical record playground for simulation of documentation, an equipped pediatric code cart, and a mannequin.

Day 2 requires the same equipment and will be held in the same facility. The day's activities will be focused on shock in the pediatric patient. Pre-tests will be given in the morning, followed by a review and discussion using the didactic PowerPoint slides on shock in the pediatric patient. A simulation with a debriefing, discussion, and reflection will be conducted. After lunch another simulation and debriefing, discussion, and reflection will occur. At the end of the day, the students will take the post-tests of knowledge and shock-scenario-specific self-efficacy.

Day 3 will also require the same equipment and facility. The day will begin with pre-tests of knowledge and scenario-specific self-efficacy, followed by a PowerPoint presentation for didactic review and discussion of cardiac emergencies. A simulation and

debriefing, discussion, and reflection will take place prior to lunch. After lunch another simulation session, and post-tests of knowledge and scenario-specific self-efficacy will be conducted. On this final day, the formative, reflective, and summative evaluations will then be completed by the students (Appendix A).

Instructional Materials

In addition to the facility, simulation mannequins, and audio visual equipment, handouts of the PowerPoints will be provided. Paper to take notes and pens will also be available.

Existing Supports

The director of nursing education will support the continuing education application and the payment of the instructors if the course is given during off hours, such as weekends. The class is budgeted through nursing education. Courses given at the hospital are free to the nurses; therefore, they will be able to obtain continuing education credits without payment.

Potential Barriers

Potential barriers include the difficulty in securing a room for education. The education classroom must be booked a year in advance. Other barriers include the possibility that instructors or nurses would be unavailable. Instructors may not be able to teach because they are instructing other classes or they have a conflict due to other duties, such as the orientation of new staff. Nurses may not be able to attend the classes if patient census and acuity are high and staffing is insufficient so they must work on their units. Poor enrollment may also be a barrier.

Potential Solutions to Barriers

The offering will have to be planned a year in advance. This planning will insure that the continuing education credit application is complete and approved, room availability is secured, and instructors have been obtained. The nurses will have to be scheduled to attend classes separately from their patient care work hours. Registration can be increased by frequently advertising the class in advance, and discussing the importance of the classes with the nursing leadership and potential attendees at meetings and huddles. Advertising will be done by sending posters to individual departments via email. The nursing education secretary will send email and create the posters.

Roles and Responsibilities of Students and Instructors

The role of the students includes active participation in the classroom work. The students will need to be engaged in the scenarios and complete all assessments. The facilitators will need to create a supportive learning environment in which the students are able to ask questions without repercussions. The instructors also are required to have all students participate, and they must be able to facilitate interactive discussions with reflective questioning. The instructors will have to be educators or PALS instructors. I will meet with the instructors for an hour to allow them to ask questions and review the plan for the course. This meeting will occur prior to each class.

Project Evaluation Plan

The evaluation plan for the project is both formative and summative. Formative evaluations are used to evaluate student learning during teaching in order to improve teaching, and for students to recognize strength and weaknesses of the program.

Summative evaluations are to evaluate student learning. The evaluations will be in multiple forms, including debriefing, post-tests, instructor scenario check lists, written evaluations, and student feedback.

Formative Evaluations

Formative assessment is used to identify aspects of student learning while providing feedback on instruction. This continuous dialogue may be used by instructors to improve their teaching, and to enable students to identify their learning strengths and weaknesses (Suskie, 2009).

Pre-tests are a form of testing that will direct learning. Reviewing the pre-tests will enable the instructor and the learner to identify learner weaknesses in understanding of the content. Debriefing is another form of formative evaluation. Debriefing is an evaluation for the students to engage in reflective evaluation of their performance. This provides an opportunity for the student to freely discuss his or her learning needs and recognize the concepts that have been mastered. During debriefing, the instructor will use the debriefing tool, which will guide the discussion with the students. The instructors will engage each of the students by asking them to answer questions. Formative assessment can also guide the development of subsequent courses (Suskie, 2009).

Summative Evaluations

The goal of summative assessment is to evaluate student learning at the end of an instructional unit. Summative assessment often compares learning against a rubric or benchmark (Suskie, 2009). Post-tests are a form of summative evaluation (Suskie, 2009). Direct evidence of student learning will be measured with post-tests and the differences

in the pre-test and post-test scores. The tests are based on pediatric advanced life support fundamentals. The tests will include drug dosages and interventions that are evidence based. Indirect evidence will be the self-efficacy questionnaires. This evaluation will enable the students and the teacher to gauge the students' confidence level before and after the class in performing in future emergency pediatric situations.

The scenario checklist is also another summative evaluation instrument in which the instructor is using a standard list of skills that are required for the learning to be complete. The checklist will allow the teacher to understand the strengths and weaknesses of the students in the scenarios and will serve as a tool to direct further learning.

Summary

There will be formative and summative evaluations of the performance of the instructors and the learning of the students. These will include written evaluations. Students' success and knowledge acquisition is important. Students must be able to engage in the learning activities and the instructor must create a supportive leaning environment. Overall evaluation of the offering is essential to support student needs and educational goals. There will be a written program evaluation as to what the nurses learned, with an opportunity to provide additional comments.

The overall goals of the 3-day workshop include an increase in self-efficacy of the nurses, an increase in their knowledge of pediatric emergencies, and improvement in simulated care as measured with the debriefing tool after practice. Key stakeholders, including nurse managers, directors of nursing, and the senior vice president of nursing,

will be informed of the results of the educational offering, including the rate of enrollment.

Project Implications

The possible social change that is apparent as a result of this project will be the improvement of patient outcomes. The outcomes of pediatric patients at the local institution will likely improve because nurses will have the opportunity to practice their response in emergency situations through the planned workshop. This improvement in care will support the local community's health care needs and their access to quality health care.

When patient outcomes improve, stakeholders support initiatives. The project will also support lifelong learning for nurses, certification by offering continuing education credit, and competency review required by accrediting agencies. The stakeholders of physicians, nursing, and administration value all aspects of this project.

Conclusion

The project was developed from the results of the research. The social implications include improved patient outcomes for the community served due to improved knowledge and self-efficacy of the pediatric nurses. Patients and families expect quality outcomes at their community hospital (Centers for Medicare and Medicaid Services, 2015). Healthcare consumers can obtain information on the best care and quality available, and they can take their business to those facilities with the highest ratings. It is important in a competitive healthcare environment to highly satisfy patients so that they will return for care in the future. A patient's perception depends on what they

see of hospital employees' performances, commitment, and teamwork (Burger, 2014). Researchers at a children's hospital found that self-efficacy in recognizing clinical deterioration was related to whether a clinician quickly activated the rapid response team when there were abnormal assessment findings in a deteriorating child. Nurses, especially novice nurses, doubt their skills in identifying the deterioration of a patient (Robert et al., 2014). Conversely, Robert et al. found that the presence of self-efficacy was essential in overcoming resistance in order to invoke the escalation of care.

Staff will gain knowledge and practice from the proposed educational project. The utilization of Kolb's experiential learning theory as the basis for the educational offering will enable students to personally direct their own learning. The staff will also gain continuing education credits for their certification requirements. Practice of the low volume adverse events will improve practice during these events. Student participation, testing, and simulation will engage the student on all levels as directed by Kolb's theory. Evaluations will enable both students and teachers to measure their progress throughout the educational offering. Reflections of the project plan will be discussed in the next section, including limitations, weakness, and alternatives.

Section 4: Reflections and Conclusions

Introduction

During the process of research, analysis, and project development, I had many opportunities for learning. I will reflect on the process, the strengths of the project, and its limitations in the next section. Through this process, my scholarship, collaborative interaction, and scholarly writing improved.

Project Strengths and Limitations

The project will address the problem of nurses' lack of experience in pediatric emergency situations by facilitating practice in a supportive educational environment. The educational offering will reflect Kolb's educational theory in which the student is able to have concrete experience, reflective observation, abstract conceptualization, and active experimentation (Schenck & Cruickshank, 2015). The project will include all of these concepts by including testing, simulation, didactic presentations, and debriefing exercises. One of the strengths of the project is that it will address an area of concern for me, for the staff, and also for nursing leadership. This concern is whether the self-efficacy and the knowledge of the nurses expected to respond to pediatric emergencies is adequate to ensure the best care and outcomes.

Another strength of the project is that it has led to the development of a new curriculum to help the nurses gain knowledge through practice with simulation. The project will address the problem of the lack of opportunity for pediatric nurses to practice emergency skills. The nurses will be able to practice the scenarios that do not occur often

in their clinical setting during nursing care. Therefore, strengths of the project include that it will provide:

- Simulations that allow nurses to practice emergencies,
- Debriefings that allow the nurses to reflect upon their performance,
- Location that is convenient for the nurses in the hospital nursing education classroom,
- Continuing education credits to document acquired skills, and
- Evaluations that allow the nurses and the instructors to reflect on their performances.

One limitation of the project was that I will not be able to evaluate actual practice in the clinical area. Emergencies in the pediatric population occur infrequently. Analysis of performance in real time is difficult. However, I will review documentation of care after emergencies, and interview staff to glean information about staff performance.

A classroom setting may not be ideal since recreating the clinical setting is difficult. Simulations may be done in a simulation laboratory, but it is off site and 30 minutes from the local institution. Offering the class at this off-site location would potentially decrease enrollment. Another limitation of the project is that it will not be an interdisciplinary offering, so team dynamics will not be practiced (Aiken, Clarke, Sloane, Lake, & Cheney, 2008), and physicians will not be exposed to the learning experience. Nurses may attend after their shifts or prior to their shifts and may be tired or disinterested. Anxiety may also be present during simulations (Bandura, 1993) depending

on the students' past experiences in educational offerings. This anxiety may lead to poor performance.

One way to decrease the limitations discussed would be to do mock codes in the areas of practice in which pediatric patients receive care. There could be a series of mock codes that would occur throughout the institution once a quarter. The multidisciplinary team would respond in a manner as if it was an actual event. This would ensure team practice and practice in the clinical setting (Aiken et al., 2008). The downside of this approach is that no continuing education units would be given and no review of information could occur prior to the mock code.

Recommendations for Alternative Approaches

The problem that generated this study was the reported lack of nurses' confidence in the practice of pediatric emergency skills, which was thought to possibly lead to poor performance in pediatric emergency situations. The self-efficacy concept relates to the nurse's belief of how well he or she can perform in an emergency event. The results of the study showed that self-efficacy could not be predicted by nurses' knowledge of pediatric emergency care, years of clinical experience, and years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients. Correlation analysis, however, demonstrated a significant positive correlation between knowledge and years of PALS, years of certification and years of experience, years of pediatric experience and years of nursing education. There was a positive correlation between years of pediatric experience and years of experience, and there was a positive correlation between self-efficacy and years of nursing education.

A recommendation for another approach for the project would be to do the pediatric emergency simulations on the unit. The students could complete the pre-tests online. The educator would schedule the simulation on the unit through the unit manager and post-tests would be completed on line at a later date. This alternative method would assist with time constraints and would solve the problem of taking staff members off unit when they are busy with patient care demands. It would not, however, provide the type of experiential learning that I felt would be more appropriate to increase self-efficacy of the nurses who might experience a pediatric emergency.

A schedule of mock codes on the units would also be an alternative approach. Simulation taking place in the simulation lab is also a possibility, but as discussed previously, distance from the hospital makes this alternative impractical. Another possibility is to include the classes during orientation to the units where pediatric patients are given care. The debriefing afterwards would be the opportunity for the instructor to bring up key points in caring for the pediatric patient in an emergency, and for nurses to evaluate their personal performance.

An additional consideration would be to incorporate an online testing module in the proposed educational plan. This approach would be for the student to take a self-efficacy questionnaire and to complete the pre-tests online in Healthstream, the institution's online learning platform. Once the pre-tests were completed, nurses would sign up for didactic, simulations, and debriefings in an education classroom.

Another alternative would be to include debriefings with every emergency event and near misses. Praise would be given to staff who performed well. Pediatric emergency

education can be included in all new staff orientation for areas in which pediatric patients are served.

Scholarship, Project Development, and Leadership and Change

During the research and the development of the 3-day educational workshop, the leaders of the institution consistently provided encouragement and support. Support was received throughout the study, even during three changes of the senior vice presidents of nursing. Support never decreased during the process. All nurse managers were supportive of my visiting the units of practice, and the nurses in all areas were receptive to my presentations.

Planning a well-constructed research study is complex and required knowledge of research methods and statistical analysis. The development of the research plan, including creating the knowledge scale, and using an established tool, the self-efficacy scale, was an experience in learning collaboration and scholarship. Development included the collaboration with multiple experts in nursing and in research to produce a project study that was well thought out, practical, and pertinent to practice. I also learned that even with a plan for data collection, recruitment for a research study may not meet expectations.

Leadership and change were also part of the experience. Leadership goals were expressed through the support of the project. I also learned that what staff and leadership say about a problem may not be reflected in the results of research. This exemplifies that nursing issues are complex. Leadership is required to tackle clinical and educational issues in the healthcare setting.

Designing this project allowed me to be the leader of a solution that will positively impact pediatric patients through improved knowledge of the nurses who provide their care. Change in how emergency response knowledge, self-efficacy, and education are viewed by myself, the staff, and the leadership, has occurred as a result of this research and the proposed project. Reflection on the results of the study led me to develop an educational offering in addition to PALS that addresses emergency responses. The offering will give the staff the opportunity to practice emergency skills and increase their self-efficacy in the performance of these skills. The 3-day workshop will also enhance their education by giving nurses the continuing education credits to maintain certification. Finally, the workshop will include a relaxed informal atmosphere in which learning can readily occur. Debriefing will be conducted with each simulation. Debriefings are often quick and hurried in the clinical setting, but the planned workshop debriefings will be a core element of learning, since reflection is instrumental in the instructional process (Kolb, 1984).

Reflections on the Importance of the Work

I personally learned to collaborate with multiple disciplines in order to coordinate this research project. I had access to leadership that I had not previously experienced. The senior vice president of nursing supported me and the research, the IRB approved the research, and the nursing staff participated. Interactions with all of these individuals improved my personal access to stakeholders and staff who care for pediatric patients. My major learning involved improving my writing skills as a scholar, which was my weakness throughout the process. Even though I had been a part of multiple research

projects, the rigor required of this scholarly work involved much more effort and skill than I had expended in the past. Scholarly writing, project development with a theoretical framework, and analysis of the problem in the literature were all aspects of this process that provided learning experiences.

The importance of the work was that it explored a problem that many other institutions encounter, and that has the potential to negatively impact patient care and outcomes (Macyk, 2010). Other institutions may have emergency events that occur infrequently, that require expertise and accurate, rapid interventions, and that the staff needs to practice. Not only did this research and project address this common issue, it also provided a template for investigating similar issues.

This work was also important because it highlighted that nursing issues are complex, and the views of the staff and leadership may not coincide with results of research and analysis. These lessons will assist other researchers in developing and designing other projects and research. The research results did not reflect anecdotal evidence, and it was important that this was discovered and reported to the staff and leadership. It was also key that results were honestly reported, discussing the positives and negatives of the project. This includes the disappointing factor that recruitment did not meet my expectations.

My personal learning included dealing with the challenges of data collection, implementation, and instrument development. I also learned that the staff is motivated in their own learning as seen in the characteristics of education and certification within the

sample. This positive trait of the staff supports offering continuing education units for the educational sessions in order to encourage the nurses to enroll and attend.

Implications, Applications, and Directions for Future Research

The staff in the institution voiced concerns about a lack of confidence related to their ability to respond to pediatric emergencies. However, the results of the study found that many characteristics of the nurses, such as the nurses' knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients, did not predict self-efficacy. Implications include that self-efficacy related to the ability to respond to pediatric emergencies must be based on other factors not studied in this research. This is a recommendation for further research. Another recommendation would be to repeat the study with a multi-center approach, an academic hospital, or a children's hospital, with a larger sample. Also a possible area of study is to investigate whether a lack of self-efficacy is actually reflected in the quality of care delivered during an emergency.

Social change on the individual level includes the patient and the nurses caring for them. The patient will receive optimal care as the project includes a review of the standards in pediatric emergency care. The nurse will increase her confidence through the review. The educational plan will increase the nurses' self-efficacy with the practice of emergency response skills. The institutional change will be that the pediatric emergency workshop can become a regular offering in the yearly educational schedule. This pediatric emergency program could be a template for a similar workshop that includes

responses to other emergencies, such as those seen in adults, laboring women, and neonates.

Since the study, and with the development of the learning activity, the nurses can be confident that they are able to care for the children in the hospital in an emergency situation. Organizational social change will occur from the results of this assessment of a perceived problem, research and analysis of data, and the project developed to address the results. This study was the first research conducted in the institution examining a clinical and educational problem, and the project that resulted will be the first to evolve directly from research.

Methodological implications include having a realistic plan for teaching staff nurses. Adult learners need multiple teaching styles to engage them. Their learning can result in better care for their patients. The scenario based learning will enable the students to practice their nursing skills. It will be important to find the right balance of didactic instruction and testing. The instructor will have to be skilled to engage all students to participate in discussion and simulation cases.

Methodological implications regarding the research include having a realistic plan for recruitment. The small sample size of this study may have impacted the research results. By not achieving the sample size indicated by the power analysis, statistical significance was not achieved. Another option in an effort to increase the sample size might have been to conduct the study at two sites. The effect size calculated was very small, so a larger sample size may not have resulted in statistical significance. Some or all of the variables selected to study may not be related to self-efficacy, therefore a

sample of any size would not have improved the results. The only predictor that was close to significant indicated a negative relationship between years of experience and self-efficacy.

The theoretical change comes from encompassing the adult learning theory into the educational process for the staff. To ensure that the nursing staff is engaged, it is of utmost importance to include documented and tested educational theories in the approach of teaching. Therefore, the educational project that I developed includes numerous ways to engage and teach the learner in order to address the multiple learning styles of adult learners. Reflection and encouragement are included in the educational plan. The didactic time frame in the workshop is limited so as to encourage the hands on style of learning that the adult learner requires. Offering continuing education units that are required for maintaining certification is an added benefit for the nurses.

I believe this project will set a precedent on how to address potential clinical challenges throughout the institution. Application includes that this project gives direction for developing other educational programs for nurses. The results and lessons learned from the research may be used in other studies. The knowledge test that I developed may be helpful in performance improvement projects and can be used by nurse educators to identify educational needs of the nurses caring for pediatric patients.

Conclusion

The research results add to the body of evidence in educational research and nursing research. This research was designed to explore and address nurses' educational needs as related to a perceived clinical problem. This research may inform other research

on clinical topics related to nursing knowledge and self-efficacy. The experience I gained through the process of the research will be invaluable in my future research efforts.

The process of project development, execution, and planning for implementation of an educational project was personally challenging. The resulting 3-day workshop made the effort worthwhile. The educational plan is designed to improve patient outcomes in the local institution by providing the opportunity for staff to practice in emergency situations. Teaching the 3-day workshop will also refresh the knowledge and skills of instructors from the settings where children are provided care.

This project could also be implemented on a larger scale in a larger institution of a children's hospital. This type of education with simulation would provide opportunities for the entire healthcare team to work together to improve teamwork and communication (Lundberg & Korndorffer, 2015). Education and practice are key initiatives to ensure that clinicians are ready to respond.

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Appendix A: Project

Title of Project: Pediatric Emergency Review

Purpose: The purpose of this project is to increase knowledge and self-efficacy in nurses caring for children in the institution. The project will also allow the nurses to practice emergency situations and utilize pediatric emergency equipment.

Mission: The mission of the 3-day pediatric emergency review is to improve the self-efficacy of all nurses caring for pediatric patients in regards to pediatric emergencies.

Goal: The goal of the 3-day review is to familiarize the nurse with the care of the pediatric patient experiencing an emergency, reviewing the types of emergencies and reviewing the equipment to care for the pediatric patient in an emergency.

Target Audience: Nurses in the institution caring for pediatric patients in their practice.

Learning Objectives: Upon completion of the review workshop, the learner will be able to:

1. Identify a respiratory emergency in a pediatric patient.
2. Intervene in a respiratory emergency using evidence based practices learned in the review.
3. Identify a cardiac emergency in a pediatric patient.
4. Intervene in a cardiac emergency using evidence based practices learned in the review
5. Identify a shock emergency in the pediatric patient.
6. Intervene in a shock emergency using the evidence-based practices reviewed in class.

7. Increase their knowledge of pediatric emergencies by improving their knowledge score on post-test.
8. Improve scores on self-efficacy exam post-instruction and practice.

Desired Outcomes: The overarching outcomes are improved knowledge, improved self-efficacy, and opportunity to practice skills.

Program Instructions:

1. Potential faculty will consist of the clinical nurse specialist of pediatrics and pediatric ICU, nurse manager of pediatrics and pediatric ICU, Pediatric Advanced Life Support instructors in the institution.
2. Dates, locations, and times of instruction will be planned through nursing education and disseminated through their yearly catalogue of courses.
3. Continuing education units will be applied for by the lead instructor through the department of nursing education.
4. The location will have table and six chairs, projector, lap top computer for electronic medical record documentation, a fully equipped pediatric code cart, and mannequins of infant and child. Restroom facilities are provided. The temperature control of room and lighting may be adjusted.
5. All posttests and pretests for the review day will be collated and available to students on the day of the class.

Instructions for use of PowerPoint presentation:

1. Review all PowerPoint presentations prior to the review day. Review the topic whether it is cardiac, respiratory, or shock emergencies. Topic discussions

include cardiac arrhythmias and definitions, bradycardia, supraventricular tachycardia, ventricular tachycardia and ventricular fibrillation. Respiratory emergencies include discussion on retractions, breathe sounds, upper and lower airway distress. Sepsis discussion includes lab work, distinguishing vital signs, fluid resuscitation, and sepsis algorithm. The PowerPoint is a guide for the instructor to ensure that these critical points are discussed with the learner.

2. The instructor should ask the lead instructor any questions or clarifications that are needed.
3. Personal experiences may be shared and will foster student participation.

Assessments:

1. Pretest respiratory, cardiac, and shock emergencies.
2. Posttests respiratory, cardiac, and shock emergencies.
3. Simulations and debriefing tool after respiratory, cardiac, and shock simulations.
4. Self-efficacy pretest and posttests.
5. Workshop evaluation.

Timetable for Workshop (replica)

Task	Time	Stakeholders
Obtain • Resources • Venue • CEUs • Review Meeting • Instructors	1 year in advance	Director Nursing Education Nurse Managers Program Coordinator Instructors
Confirm • Speakers	2 months in advance	Program Coordinator Director of Nursing Education All Instructors
Program	8 hours/3 days	Program Coordinator Instructor Students
Evaluations • Pretests • Debriefing • Performance checklist • Posttests • Workshop evaluation	• Beginning of each day • Post-simulation • End of each day	Instructors Students

Trainer Notes

Set up

Ensure that all the equipment is available. Discuss with the education secretary 3 days prior to course. AV equipment is in room and tables and chairs are set up. Code cart for pediatrics will need to be available along with an extra computer for entering the EMR code narrator.

Pretests

Begin the day with the pre-tests. Then move on to the slide show. There are only three slides for each day.

Slides

The slides are a guide. Review of how to draw up medication, where to find and use the code narrator in the EMR, and the pediatric code cart review is included in this section. The slides begin the discussion and then the instructor moves on to review the hands-on interventions using the tools gathered for the course.

Simulations

The simulations are reviewed in an atmosphere that is safe. Students should delineate their roles in the code, for example: drawing up medications, administration of medications, and documentation. Use the simulations supplied for each day.

Debriefing and performance checklist

After each scenario, engage in a debriefing using the tool supplied. Go around the room and ask all participants the questions in the tool to ensure student engagement. Discuss with participants the performance checklist.

Posttests and Evaluations

Review post-tests after they have all been completed with the group. Have the students engage in discussion about the questions and rationales for the interventions. Finally, students will complete evaluations of the course.

Workshop Agenda
Day 1: Respiratory Distress

Goals:

- At the end of this activity the learner will be able to manage respiratory distress in children
- The learner will be able to gather supplies for respiratory distress for the pediatric patient
- The learner will be able to evaluate own performance in the debriefing session.

Target audience:

- Nurses expected to care for pediatric patients and have a desire to practice emergency care.
- Small group of 6 nurses in each class

Tools:

- Computer, slide projector
- Pediatric code cart materials
- Pediatric mannequins
- Simulator
- Cardiac respiratory monitor
- Defibrillator
- Summative and formative evaluations

Activity:

- Pretest 5 questions related to respiratory distress in pediatric patient and review (20 minutes)
- Self-efficacy questionnaire
- Fundamental review: 3 slide review by instructor and discussion of equipment, differences of child versus the adult, electronic medical record, and medications in code cart. (20 minutes)
- Hands-on activity with scenario (40 minutes)
- Debriefing and performance checklist (30 minutes)
- Posttest and review (20 minutes)

Break: 1 hour

Activity: Second respiratory distress scenario

- Pretest 5 questions related to respiratory distress in pediatric patient and review (20 minutes)
- Hands on activity with scenario (40 minutes)
- Debriefing and performance checklist (30 minutes)
- Posttest and review (20 minutes)
- Review of tests and concepts learned in the day
- Evaluations and self-efficacy questionnaire related to respiratory illness

Evaluations:

- Review of tests and concepts learned in the day
- Evaluations and self-efficacy questionnaire related to sepsis

Outcomes:

- The nurse will increase her self-efficacy by the end of the learning module related to respiratory illness.
- The posttest scores will be greater than pre-test scores
- The nurse will be able to articulate her own strengths and weaknesses in debriefing exercise

Day 2: Pediatric sepsis

Goals:

- At the end of this activity the learner will be able to manage sepsis in children
- The learner will be able to gather supplies for sepsis for the pediatric patient
- The learner will be able to evaluate own performance in the debriefing session.

Target audience:

- Nurses expected to care for pediatric patients and have a desire to practice emergency care.
- Small group of 6 nurses in each class

Tools:

- Computer, slide projector
- Pediatric code cart materials
- Pediatric mannequins
- Simulator
- Cardiac respiratory monitor
- Defibrillator
- Summative and formative evaluations

Activity:

- Pretest 5 questions related to sepsis in pediatric patient and review (20 minutes)
- Self-efficacy questionnaire (20 minutes)

- Fundamental review: 3 slide review by instructor and discussion of equipment, differences of child versus the adult, electronic medical record, and medications in code cart. (20 minutes)
- Hands on activity with scenario (40 minutes)
- Debriefing and performance checklist (30 minutes)
- Posttest (20 minutes)
- Hands on activity (40 minutes)
- Debriefing (30 minutes)

Break: 1 hour

Activity:

- Second sepsis scenario
- Pretest 5 questions related to sepsis in pediatric patient and review (20 minutes)
- Hands on activity with scenario (40 minutes)
- Debriefing and performance checklist (30 minutes)
- Posttest and review (20 minutes)

Evaluations:

- Review of tests and concepts learned in the day
- Evaluations and self-efficacy questionnaire related to sepsis

Outcomes:

- The nurse will increase her self-efficacy by the end of the learning module related to sepsis.
- The posttest scores will be greater than pretest scores

- The nurse will be able to articulate her own strengths and weaknesses in debriefing exercise

Day 3: Pediatric cardiac arrhythmias

Goals:

- At the end of this activity the learner will be able to manage cardiac arrhythmias in children
- The learner will be able to gather supplies for cardiac arrhythmias for the pediatric patient
- The learner will be able to evaluate own performance in the debriefing session.

Target audience:

- Nurses expected to care for pediatric patients and have a desire to practice emergency care.
- Small group of 6 nurses in each class

Tools:

- Computer, slide projector
- Pediatric code cart materials
- Pediatric mannequins
- Simulator
- Cardiac respiratory monitor
- Defibrillator
- Summative and formative evaluations

Activity:

- Pretest 5 questions related to cardiac arrhythmias in pediatric patient and review (20 minutes)

- Self-efficacy questionnaire (20 minutes)
- Fundamental review: 3 slide review by instructor and discussion of equipment, differences of child versus the adult, electronic medical record, and medications in code cart. (20 minutes)
- Hands on activity with scenario (40 minutes)
- Debriefing and performance checklist (30 minutes)
- Posttest and review (20 minutes)

Break: 1 hour

Activity:

- Second cardiac arrhythmia scenario
- Pretest 5 questions related to cardiac arrhythmias in pediatric patient and review (20 minutes)
- Hands on activity with scenario (40 minutes)
- Debriefing and performance checklist (30 minutes)
- Posttest and review (20 minutes)

Evaluations:

- Review of tests and concepts learned in the day
- Evaluations and self-efficacy questionnaire related to cardiac arrhythmias

Outcomes:

- The nurse will increase her self-efficacy by the end of the learning module related to cardiac arrhythmias.
- The posttest scores will be greater than pretest scores

- The nurse will be able to articulate her own strengths and weaknesses in debriefing exercise

PowerPoints Day 1

Respiratory Distress Fundamentals in Pediatric Patients

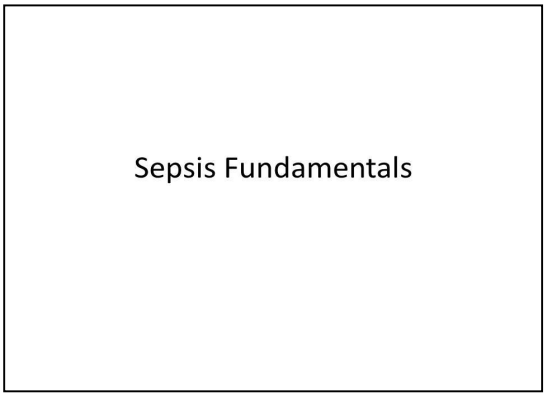
Normal Limits

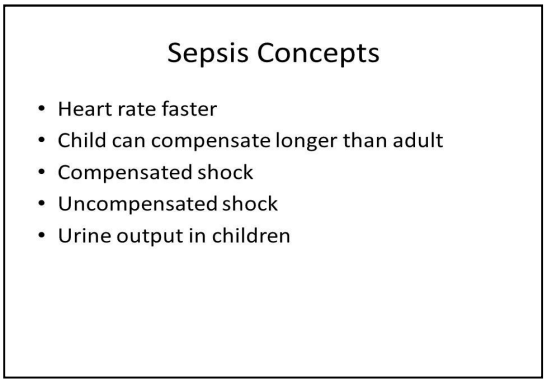
- Age is determining factor of child's normal limits
- Younger - respiratory rate and heart rate faster
- By the age of 12 - like an adult
- At 6 months - no longer obligatory nose breathers

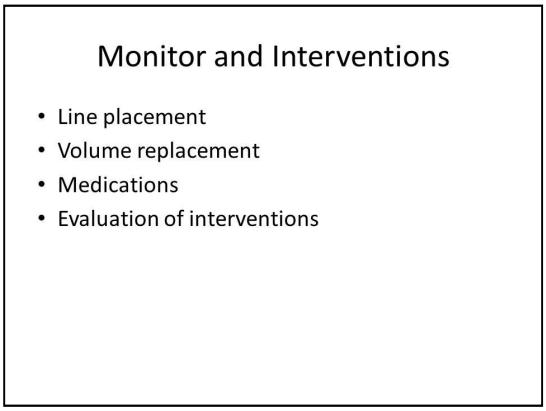
Monitoring and Interventions

- Pulse oximetry, end tidal co2, cardiac monitor
- Oxygen to keep pulse oximetry 94 or greater
- Oxygen Delivery –
  - Non rebreather
  - Bag valve mask
  - Oxygen face mask
  - Nasal cannula

PowerPoints Day 2







PowerPoints Day 3

Cardiac Arrest in Children

Cardiac Arrhythmias

- Heart rate faster than adult
- Typical pediatric cardiac arrhythmias
  - Bradycardia
  - SVT
  - PEA
  - Ventricular fibrillation
  - Ventricular tachycardia

Monitor and Interventions

- Cardiac monitoring
- Setting appropriate limits for age
- Cardioversion and defibrillation
- Medications
  - Epinephrine
  - Amiodarone
  - Adenosine

Pretest Respiratory Distress

1. The first treatment for bradycardia in the infant population without history of cardiac disease is
    a. Epinephrine
    b. Oxygen administration
    c. Defibrillation
    d. Normal Saline bolus
2. An infant is an obligatory nose breather until the age of
    a. 2 months
    b. 3 months
    c. 6 months
    d. 12 months
3. What respiratory rate would be considered tachycardia for a 3-month old?
    a. 20 breaths/min
    b. 30 breaths/ min
    c. 65 breaths/ minute
    d. 34 breaths /minute
4. What medication is administered for lower respiratory distress?
    a. Epinephrine nebulizer
    b. Albuterol nebulizer
    c. Zithromax intravenous
    d. Flovent inhaler
5. For two-person CPR on a child, the ventilation-to-compression ratio is
    a. 2:30
    b. 1:5
    c. 2:15
    d. 1:15

Self-Efficacy Questionnaire Related to Respiratory Distress

Directions: Answer these questions while thinking about your confidence and your feelings about how you perform while caring for a pediatric patient with a respiratory emergency. An example of such a patient is one that has a respiratory rate greater than normal, retractions, oxygen saturation less than 92% on room air, and no air movement upon auscultation.

Please circle the appropriate number that best describes you.

1= Not at all true; 2= hardly true; 3= moderately true; 4= exactly true

I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
I am confident that I could deal efficiently with unexpected events.	1	2	3	4
Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
I can solve most problems if I invest the necessary effort.	1	2	3	4
I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
If I am in trouble, I can usually think of a solution.	1	2	3	4
I can usually handle whatever comes my way	1	2	3	4

Critical performance checklist respiratory emergency skills

Performance steps	Check if done correctly
Verbalizes maximum nasal cannula flow rate (4L/min)	
Verbalizes difference between high flow and low flow oxygen systems. High flow >10L/min; Low flow <10L/min	
Opens airway, jaw thrust for trauma	
Selects appropriate size airway	
Verbalizes assessment of adequate breathing after airway insertion	
Suctioning	
Uses correct mask for ventilations and performs valve bag mask ventilation using E-C clamp technique	
Endotracheal intubation: states equipment, secures tube, suctions, assessment of correct tube placement	

American Heart Association (2010). *Pediatric advanced life support instructor Manual.* Dallas: American Hearst Association.

Debriefing Tool

What did we do well?

What influenced the group during the simulation and did it affect the outcome of the experience?

What did the participants learn from the experience?

Did the simulation accomplish the stated purposes?

What could we do better?

What do we need to fix?

How closely did the simulation approximate a real situation?

Posttest Respiratory Distress

1. Oxygen saturation is maintained at
    a. 90%
    b. 93%
    c. 100%
    d. 89%
2. Zopenex is used in the treatment of asthma when the child has (circle all that apply)
    a. Tachycardia related to nebulizer treatment
    b. Bradycardia related to sleep apnea
    c. Tachycardia related to underlying cardiac condition
    d. Bradycardia related to oxygen consumption.
3. Normal physiological peep is
    a. 2
    b. 3
    c. 5
    d. 10
4. While giving breaths to a patient with a bag valve mask, the practitioner should be at the
    a. Left side of the bed
    b. Head of the bed
    c. Foot of the bed
    d. Right side of the bed
5. The normal respiratory rate for a 4-week old is
    a. 16-20 breathes/minute
    b. 30-40 breathes/minute
    c. 20-30 breathes/minute
    d. 40-60 breathes/minute

Pretest Sepsis

1. What is the volume of fluid that is needed to resuscitate a pediatric patient?
    a. 15 ml/kg
    b. 5 ml/kg
    c. 20 ml/kg
    d. 30 ml/kg
2. Expected urine output is
    a. 30 ml/hr
    b. 1-2 ml/kg/hr
    c. 10 ml/kg/hr
    d. 20 ml/hr
3. Antibiotics are expected to be given within _____when sepsis is the diagnosis?
    a. 20 minutes
    b. 10 minutes
    c. 60 minutes
    d. 30 minutes
4. Decompensated shock is shock in which
    a. the blood pressure is normal and heart rate high
    b. the blood pressure is high and the heart rate is low
    c. the blood pressure is low and the heart rate is low
    d. the blood pressure is low and the heart rate is high
5. Shock that is most often seen in the immunosuppressed patient is called
    a. cardiogenic
    b. distributive
    c. septic
    d. hypovolemic

Self-Efficacy Questionnaire Related to Sepsis

Directions: Answer these questions while thinking about your confidence and your feelings about how you perform while caring for a pediatric patient with a sepsis emergency. An example of such a patient is one that has an abnormal base excess, lactic acid level greater than 2.2, and urine output less than 1-2ml/kg/hr.

Please circle the appropriate number that best describes you.

1= Not at all true; 2= hardly true; 3= moderately true; 4= exactly true

I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
I am confident that I could deal efficiently with unexpected events.	1	2	3	4
Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
I can solve most problems if I invest the necessary effort.	1	2	3	4
I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
If I am in trouble, I can usually think of a solution.	1	2	3	4
I can usually handle whatever comes my way	1	2	3	4

Critical performance checklist for sepsis skills

Performance steps	Check if done correctly
Verbalizes sepsis criteria and algorithm	
Verbalizes I/O insertion and locations and contraindications	
Inserts I/O, confirms insertion	
Administers fluid	
Prepares and administers medications	

AHA, 2010.

Posttest Sepsis

1. After three tries of unsuccessfully attempting an IV, what is the best option?
    a. Central line
    b. Femoral line
    c. Intraosseous
    d. PICC line
2. What is the timeline according to the sepsis protocol for a patient to receive antibiotics if sepsis is suspected?
    a. 15 minutes
    b. 30 minutes
    c. 40 minutes
    d. 60 minutes
3. What lab value is drawn that is a predictor of sepsis, and must be repeated every 4 hours once sepsis is suspected?
    a. CBC
    b. Lactic Acid
    c. WBC
    d. ESR
4. What is the expected urine output for a 5-year old?
    a. 10- 20 ml/kg/hr
    b. 20-30 ml/kg/hr
    c. 1-2 ml/kg/hr
    d. 5-8 ml/kg/hr
5. What is the crystalloid volume that would need to be infused for 5 year old septic patient?
    a. 20 ml/kg
    b. 10 ml/kg
    c. 30 ml/kg
    d. 40 ml/kg

Pre-test Cardiac Arrhythmias

1. What is the drug used for supraventricular tachycardia?
    a. Amiodarone
    b. Adenosine
    c. Epinephrine
    d. Norepinephrine
2. What is the drug used for pulseless ventricular tachycardia?
    a. Amiodarone
    b. Adenosine
    c. Epinephrine
    d. Norepinephrine
3. What is the drug used for pulseless arrest?
    a. Amiodarone
    b. Adenosine
    c. Epinephrine
    d. Norepinephrine
4. What is the drug used in sepsis?
    a. Amiodarone
    b. Adenosine
    c. Epinephrine
    d. Norepinephrine
5. What intervention is not a treatment for supraventricular tachycardia
    a. Cardioversion
    b. Ice to face
    c. Bearing down
    d. Trendelenburg positioning

Self-Efficacy Questionnaire Related to Cardiac Arrhythmias

Directions: Answer these questions while thinking about your confidence and your feelings about how you perform while caring for a pediatric patient with a cardiac emergency. An example of such a patient is one that has supraventricular tachycardia, bradycardia, or ventricular tachycardia.

Please circle the appropriate number that best describes you.

1= Not at all true; 2= hardly true; 3= moderately true; 4= exactly true

I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
I am confident that I could deal efficiently with unexpected events.	1	2	3	4
Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
I can solve most problems if I invest the necessary effort.	1	2	3	4
I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
If I am in trouble, I can usually think of a solution.	1	2	3	4
I can usually handle whatever comes my way	1	2	3	4

Critical performance checklist for arrhythmias skills

Performance steps	Check if done correctly
Applies ECG leads correctly	
Operates monitor correctly	
Identifies rhythms correctly	
Synchronizes and defibrillates for appropriate rhythms safely	

AHA, 2010.

Posttest Cardiac Arrhythmias

1. Once ventricular fibrillation is recognized, what is the next step?
    a. Check airway
    b. Defibrillate
    c. Administer amiodarone
    d. Check pulse
2. Once PEA has been determined as the cardiac rhythm, what drug should be administered?
    a. Norepinephrine
    b. Adenosine
    c. Amiodarone
    d. Epinephrine
3. Supraventricular tachycardia in children is defined as
    a. Wide ventricular rhythm with a rate > 200
    b. Wide ventricular rhythm with a rate >150
    c. Narrow ventricular rhythm with a rate >200
    d. Narrow ventricular rhythm with a rate > 150
4. Cardioversion in children is done with an energy of
    a. 1-2 joules/kg
    b. 0.5-1 joules/kg
    c. 2-4 joules/kg
    d. 4-8 joules/kg
5. Defibrillation is done in children with
    a. 1-2 joules/kg
    b. 0.5-1 joules/kg
    c. 2-4 joules/kg
    d. 4-8 joules/kg

Scenario 1: Respiratory Emergency Related to Allergic Reaction

Scenario Lead in: Patient is 10 years old and received a medication and is now experiencing difficulty breathing.

Evaluation findings

Initial findings: Anxious breathing, increased effort, stridor, pale color
Identify: respiratory distress

Intervene: call for help, open airway, apply cardiorespiratory monitor, and administer oxygen.

Evaluate Primary Assessment:
Airway: stridor
Breathing: RR30/min, retractions, SPO2 90%
Circulation: HR 130 cap refill about 2 seconds, BP 115/75
Disability: anxious
Exposure: Temperature 37 degrees Celsius

Intervene respond to tachycardia and oxygen administration

Evaluate Secondary Assessment:
History
Signs and symptoms: Stridor, retractions
Allergies: none
Medications: none
Past medical history: cellulitis of right hand recently diagnosed admitted for IV antibiotics and now in radiology for a scan to R/O osteomyelitis
Last meal: breakfast
Events: Stridor after injection of dye for radiological exam

Debriefing and performance checklist: Ask the group questions with tool and evaluate each student.

Scenario 2: Respiratory Distress

Scenario lead in: A 3month old has just been admitted with bronchiolitis

Evaluation findings

Initial findings: breathing: increased effort, retractions, pale color
Identify: respiratory distress

Intervene: call for help, open airway, apply cardiorespiratory monitor, and administer oxygen.

Evaluate Primary Assessment:
Airway: wheezing and course breath sounds
Breathing: RR60/min, retractions, SPO2 90% RA
Circulation: HR 150, capillary refill about 2 seconds, BP 95/45
Disability: inconsolable
Exposure: Temperature 37 degrees Celsius

Intervene: respond to tachycardia and oxygen administration suction for secretions

Evaluate Secondary Assessment:
History
Signs and symptoms: retractions increase rate and secretions
Allergies: none
Medications: none
Past medical history: small VSD at birth normal vaginal delivery
Last meal: 4 hours ago
Events: woke up from nap with increase respiratory effort retracting, had a snotty nose as per mother

Debriefing and performance checklist: Ask the group questions with tool and evaluate each student

Scenario 3: Sepsis

Scenario Lead in: Patient is 12 years old with an immunosuppressive illness such as lupus or chronic renal failure; or the patient has been home with an appendicitis that is now ruptured and postoperatively the patient is showing signs of sepsis

Evaluation findings

Initial findings: HR 140, BP 89/54, urine output 0.5ml/kg in last hour
Identify: Septic shock

Intervene: call for help, open airway, apply cardiorespiratory monitor, administer oxygen, start IV, prepare for bolus 20 ml/kg

Evaluate Primary Assessment: Lethargic, hard to arouse
Airway: patent
Breathing: RR 30/min, SpO2 89%
Circulation: HR 140 capillary refill about 4 seconds, BP 89/54
Disability: lethargic
Exposure: Temperature 103 degrees Fahrenheit

Intervene respond to tachycardia, oxygen administration, and temperature

Evaluate Secondary Assessment:
History: Lupus or CRF; or abdominal pain
Signs and symptoms: High temperature
Allergies: none
Medications: none
Past medical history: Lupus or CRF; or none/healthy
Last meal: lunch the day before
Events: abdominal pain for one day then resolved; high temps at home so brought to hospital

Debriefing and performance checklist: Ask the group questions with tool and evaluate student

Scenario 4: Sepsis

Scenario lead in: 5-year old comes to ED with a swollen bug bite on right leg

Evaluation findings

Initial findings
Vitals: temp 100.2, pulse 134, RR 24, BP 92/47, O2 saturation 90%
Intervene: Call for help, notify physician

Evaluate Secondary Assessment
Mother reports that bug bite sometime during the week and noticed leg was swollen this MA. Leg is red, Child lying flat, very lethargic
Allergies: None
Medical history: asthma
Last meal: last night
Medications: flovent and albuterol inhalers for asthma
Vitals: temp 100.2, pulse 130, RR 24, BP 89/45, O2 saturation 90%

Intervene: address tachycardia, address tachypnea, and decrease oxygen saturation

Scenario 5: Narrow Complex Tachycardia

Scenario Lead in: Patient is 6-month old with tachypnea, irritability

Evaluation findings

Initial findings: HR 260, BP 68/38
Identify: arrhythmia

Intervene: call for help, open airway, apply cardiorespiratory monitor, administer oxygen, start IV, prepare for medication administration or cardioversion

Evaluate Primary Assessment: Irritable
Airway: patent
Breathing: RR 30/min, SpO2 92%
Circulation: HR 260, capillary refill about 3 seconds, BP 68/38
Disability: irritable
Exposure: Temperature 100.1 degrees Fahrenheit

Intervene respond to tachycardia, oxygen administration

Evaluate Secondary Assessment:
History
Signs and symptoms
Allergies: none
Medications: none
Past medical history: none
Last meal: 2 ounces 3 hours ago
Events: poor feeding irritability, pale

Debriefing and performance checklist: Ask the group questions with tool and evaluate student

Scenario 6: Wide Complex Tachycardia

Scenario Lead in: Patient is 16-year-old with ventricular tachycardia

Evaluation findings

Initial findings: HR 150, BP 68/38
Identify: arrhythmia

Intervene: call for help, check pulse, open airway, ventilate with bag-valve-mask and oxygen, apply cardiorespiratory monitor, start IV, and prepare for medication administration or cardioversion

Evaluate Primary Assessment: unconscious
Airway: not patent
Breathing: apneic, oxygen saturation not detectable
Circulation: HR 160 cap refill about 4 seconds, BP 68/palp
Disability: unconscious
Exposure: Temperature 96 degrees Fahrenheit

Intervene respond to respiratory arrest, oxygen administration bag valve mask, intubation, tachycardia, synchronized cardioversion

Evaluate Secondary Assessment:
History: none
Signs and symptoms: apneic, tachycardic
Allergies: none
Medications: none
Past medical history: none
Last meal: lunch 3 hours ago
Events: playing baseball with friends

Debriefing and performance checklist: Ask the group questions with tool and evaluate student

Workshop Evaluation

Name (optional)

The presenter:	Strongly Agree	Agree	Disagree	Strongly Disagree
Clearly stated objectives of the presentation	○	○	○	○
Was knowledgeable about subject	○	○	○	○
Spoke clearly and confidently	○	○	○	○
Answered questions	○	○	○	○

The learner				
Was able to understand concepts	○	○	○	○
Felt concepts were pertinent to practice	○	○	○	○
Will be able to apply skills to practice	○	○	○	○

Describe something that you learned about pediatric emergencies that will assist in your practice_____

_____

_____

_____

Comments_____

_____

_____

_____

Appendix B: Cover Letter

Dear Colleague,

I am asking you to participate in a research study in which I am exploring the relationship of your perceived confidence and knowledge regarding pediatric emergencies. Your identity will not be known to me and I will not seek to find it out. You are answering these questions anonymously. By filling out and returning the questionnaires you are giving consent to participate in the study. I ask that you do not look up answers.

The knowledge test has been reviewed by multiple experts. The General Self-efficacy scale has been validated and used for forty years in the literature to quantify self-efficacy. Attached are three questionnaires, (1) a demographic questionnaire, (2) a pediatric emergency knowledge questionnaire, and (3) the General Self-efficacy questionnaire.

Please return you questionnaires in the envelope provided and place in the envelope in the secured return box.

Thank you for your participation.

Sincerely,

Nancy McNeill RN-BC, CCRN, AE-C, MA
Clinical Nurse Specialist of Pediatrics

Appendix C: Demographic Questionnaire

Please circle the answer that best describes you.

1. Gender
    a. Male
    b. Female
2. What is your age in years?_____
3. How many years have you practiced nursing?_____
4. How many years have you been caring for the pediatric population in your nursing practice?_____
5. What is your highest degree in nursing?
    a. Associate degree
    b. Bachelor degree of science
    c. Masters in nursing
    d. Doctorate
    e. other
6. How many years of nursing education?_____
7. Are you certified in a nursing specialty?
    a. Yes
    b. No

8. What specialty area are you certified in?_____
9. Number of certifications?_____
10. How many years have you been certified?_____
11. Do you hold a current PALS certification?
    a. Yes
    b. No

12. How many years have been certified in PALS?_____

Appendix D: Self-Efficacy Questionnaire

Directions: Answer questions while keeping in mind a pediatric emergency and your feelings about how you think you perform.

Please circle the appropriate number that best describes you.

1= Not at all true; 2= hardly true; 3= moderately true; 4= exactly true

I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
I am confident that I could deal efficiently with unexpected events.	1	2	3	4
Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
I can solve most problems if I invest the necessary effort.	1	2	3	4
I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
If I am in trouble, I can usually think of a solution.	1	2	3	4
I can usually handle whatever comes my way	1	2	3	4

Appendix E: Permission to use General Self-Efficacy Scale

Freie Universität Berlin

Fachbereich Erziehungswissenschaft und Psychologie
- Gesundheitspsychologie -

Professor Dr. Ralf Schwarzer
Habelschwerdter Allee 45
14195 Berlin, Germany

Fax +49 30 838 55634
health@zedat.fu-berlin.de
www.fu-berlin.de/gesund

Freie Universität Berlin, Gesundheitspsychologie (PF 10),
Habelschwerdter Allee 45, 14195 Berlin, Germany

Permission granted

to use the General Self-Efficacy Scale for non-commercial reseach and development purposes. The scale may be shortened and/or modified to meet the particular requirements of the research context.

http://userpage.fu-berlin.de/~health/selfscal.htm

You may print an unlimited number of copies on paper for distribution to research participants. Or the scale may be used in online survey research if the user group is limited to certified users who enter the website with a password.

There is no permission to publish the scale in the Internet, or to print it in publications (except 1 sample item).

The source needs to be cited, the URL mentioned above as well as the book publication:

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston. *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp.35-37). Windsor, UK: NFER-NELSON.

Professor Dr. Ralf Schwarzer
www.ralfschwarzer.de

Appendix F: Pediatric Knowledge Test

Instructions: Below are 32 questions on fundamental pediatric emergency care. Please circle your best answer.

#	Question
1	For two- rescuer CPR in children the ratio of compressions to ventilation is a. 2:30 b. 2:15 c. 1:15 d. 1:5
2	What is the ratio of breaths to compressions in 2-rescuer CPR for a person with secondary sexual characteristics? a. 2:30 b. 2:15 c. 1:15 d. 1:5
3	Synchronized cardioversion is used with which cardiac rhythm? a. Ventricular tachycardia pulseless b. Supraventricular Tachycardia c. Ventricular fibrillation d. Bradycardia
4	The first treatment for bradycardia in the infant population without history of cardiac disease is a. Epinephrine b. Oxygen administration c. Defibrillation d. Normal Saline bolus
5	The vasoactive drug given first for septic shock in the pediatric population is a. Dopamine b. Epinephrine c. Norepinephrine d. Dobutamine
6	The amount of fluid in a pediatric bolus for shock is a. 1-2 cc/kg b. 10cc-20cc/kg c. 20cc-30cc/kg d. 5cc-10cc/kg

7	Normal urine output for a child is a. 1-2cc/kg/hr b. 1-2cc/kg/day c. 30cc/hr d. 300cc/day
8	When the first intervention for bradycardia is not successful, the next step is a. Oxygenate b. Administer Epinephrine IVP c. Give a Normal Saline bolus e. Cardioversion
9	Cardioversion is indicated when adenosine is unsuccessful in what rhythm? a. Pulseless Ventricular Tachycardia b. Supraventricular Tachycardia c. Pulseless Ventricular Fibrillation d. Asystole
10	Narcan (Naloxone) is used for the reversal of a. Valium b. Morphine c. Propofol d. Ketamine
11	Romazicon (Flumazenil), is used for the reversal of a. Valium b. Morphine c. Propofol d. Ketamine
12	A three year-old would be intubated with an endotracheal tube a. With a cuff b. Without a cuff c. Either cuffed or uncuffed may be used
13	An infant is an obligatory nose breather until the age of a. 2 months b. 3 months c. 6 months d. 12 months

14	An AED can only be used in adult patients. a. True b. False
15	The American Heart Association recommends that two rescuers switch position while doing two-rescuer CPR every a. 2 cycles b. 3 cycles c. 4 cycles d. 5 cycles
16	The most effective set of compressions delivered by a rescuer during CPR is a. The first set of compressions the rescuer delivers b. The second set of compressions the rescuer delivers c. The third set the rescuer delivers d. The last set the rescuer delivers
17	CPR starts with a. A pulse check b. A response check c. Chest compressions d. Opening the airway
18	An epinephrine drip is mixed with which concentration of epinephrine a. 1:10,000 b. 1:1,000
19	A dose of epinephrine administered via IV push is which concentration? a. 1:10,000 b. 1:1,000
20	Narcan (Naloxone) is diluted with normal saline and then administered to effect a. True b. False
21	Supplies for intubation includes all **EXCEPT** a. Stylet b. Suction c. Chest tube d. Endotracheal tube

22	According to PALS, when attempts at IV access are not successful, the next option is a. Intraosseous b. Cut down c. Central line
23	In order to use a bag valve mask successfully the best position to be in is at the a. Foot of the bed b. Head of the bed c. Right side of the bed d. Left side of the bed
24	Assessment of successful intubation includes all **EXCEPT** a. Auscultation of breath sounds b. End tidal CO2 detector c. Symmetrical rise and fall of chest d. Presence of an air leak
25	Acidosis is characterized by a a. pH less than 7.35 b. pH greater than 7.35
26	Alkalosis is characterized by a a. pH less than 7.35 b. pH greater than7.35
27	Sodium Bicarbonate is administered in which situation? a. Respiratory alkalosis b. Respiratory acidosis c. Metabolic alkalosis d. Metabolic acidosis
28	Which drug is used to treat Supraventricular Tachycardia a. Epinephrine b. Adenosine c. Bicarbonate d. Dopamine
29	To remove air from the stomach of a neurological trauma patient, a(n) _____ is inserted a. Nasogastric tube b. Orogastric tube c. Chest tube d. PEG tube

30	Signs of a pneumothorax include all **EXCEPT** a. Unequal chest rise b. Unequal breath sounds c. Wheezing d. Deviated trachea
31	An asthmatic that has been admitted to an ICU within the last year is at greater risk for morbidity. a. True b. False
32	A child with right sided heart failure will have lower oxygen saturations that will not rise with oxygen administration a. True b. False