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The Effect of Perioperative Education in Undergraduate Nursing

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THE EFFECT OF PERIOPERATIVE EDUCATION IN UNDERGRADUATE NURSING

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Abstract

Background: Educational institutions have modified their curriculum and as a result perioperative education in undergraduate nursing programs has decreased to where it is nonexistent in some institutions (Byrne, Root, & Culbertson, 2016). The decrease of perioperative education in nursing programs has led to a lack of new graduate nurses choosing to work in the perioperative setting and creating a nursing shortage (Castelluccio, 2011). The purpose of this evidence-synthesizing capstone project was to explore and determine how best practices to incorporate perioperative concepts into undergraduate nursing education curricula influence new graduate employment in perioperative nursing.

Methods: A total of 12 articles fit all parameters of inclusion and exclusion criteria and was critically appraised using the Johns Hopkins evidence-based practice model. The twelve articles that were synthesized all implemented or evaluated students that had completed a perioperative course in an undergraduate nursing program.

Results: The articles focused on one of two themes. The first theme was incorporating Quality and Safety Education in Nursing (QSEN) core competencies into the undergraduate nursing curriculum and having the students gain increased skills in the six QSEN core competency areas. The second theme was increasing the number of new graduate nurses that chose to work in the perioperative setting after graduation to combat the perioperative nursing shortage.

Implications: Incorporating the perioperative setting into the undergraduate nursing program curriculum was found to have the possibility of increasing the number of nurses that choose the perioperative setting after graduation. Also, the perioperative setting provides an environment where the six QSEN core competencies can be fostered. Therefore, more original research is needed to test perioperative educational methods for facilitation of quality and safety in nursing practice.

Keywords: perioperative education, perioperative exposure, undergraduate nursing

DEDICATION

This capstone project is dedicated to my family. For my mom, Emily, and my dad, Charlie, who have always been supportive of everything I have ever wanted to do and done and have been there for me my whole life, no matter what. For my husband, Johnny, who has been supportive of me furthering my education and encouraged me throughout. For my daughter, Erin, who has allowed me to know my purpose in life, which is to make her life better. Lastly, to my coworkers and friends for listening and encouraging me.

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CHAPTER I

INTRODUCTION

The Institute of Medicine's (IOM) Committee on the Quality of Health-Care in America published two reports about how to improve healthcare in the future. The first report was published in 2000, *To Err Is Human: Building a Safer Health System.* This first report focused solely on patient safety. The second report published in 2001, *Crossing the Quality Chasm: A New Health System for the 21st Century*, had thirteen recommendations on how to improve the quality of healthcare. One of these recommendations highlighted six key aspects of improving healthcare; safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. Another recommendation by the IOM (2001) was to hold an interdisciplinary summit to modify health professional's education to increase patient safety.

The interdisciplinary summit mentioned in the IOM's 2001 report was held in 2002 with over 150 contributors. These contributors were from a wide range of disciplines, with the majority being educators from a variation of schools. The results of that summit were published in 2003 and was called *Health Professionals Education: A Bridge to Quality.* The participants of that summit discovered five core competencies that should be integrated into the health professional's education. These five competencies were similar to the IOM's 2001 report and were; patient-centered care, work in interdisciplinary teams, evidence-based practice, quality improvement, and informatics.

To comply with the 2003 IOM report of improving health professional's education to enhance the quality of healthcare, Quality and Safety Education for Nurses (QSEN) was developed in 2005 (Cronenwett et al., 2007). QSEN took the five core competencies that were listed in the 2003 IOM report and added a sixth competency, safety (Cronenwett et al., 2007).

Accompanying each competency, there were statements regarding knowledge, skills, and attitudes (KSAs), these KSAs were to be used to elucidate the competencies for ease of educational institutions to incorporate these competencies into their curriculum (Cronenwett et al., 2007).

Cronenwett et al. (2007) defined the sixth competency of safety in QSEN as using organizational efficiency and individual performance to reduce the risk of harm to patients and healthcare providers. Specifically, there are four KSA sections for safety, each pertaining to specific topics, the first section encompassed the benefits and limitations of technology, human factors such as "workarounds" and reliance on memory. The second and third KSA sections detailed creating a culture of safety and categorizing hazards and errors in the healthcare system and understanding the cause of healthcare errors and assigning responsibility. The fourth section of the safety KSAs described national regulations, initiatives, and resources that affect patient safety. To improve healthcare, specified competencies were encouraged to be added to educational curriculum, patient safety being one competency chosen for nursing programs (Cronenwett et al., 2007). According to Danko (2019) the perioperative setting allows students to develop skills critical in learning patient safety.

Statement of Problem

Incorporating QSEN into Nursing Curriculum. Cronenwett et al. (2007) reported that six core competencies (patient-centered care, evidence-based practice, quality improvement, informatics, working in an interdisciplinary team, and safety) were developed by QSEN for incorporation into nursing programs' curricula for facilitation of healthcare quality and patient safety. Similarly, Danko (2019) suggested that the QSEN six core competencies be incorporated

into undergraduate nursing curricula with an emphasis on patient safety in spite of the challenges incurred to accomplish this directive.

Perioperative Nursing Shortage. Ball et al. (2015) noted that over fifty percent of perioperative nurses were over fifty years of age, and over twenty percent of perioperative nurses are looking to retire in the next five years. Furthermore, with the baby boomer generation getting closer to retirement, the percentage of retiring perioperative registered nurses is going to keep increasing. Ball et al. (2015) suggested that if undergraduate nursing students are not exposed to specialties, including the perioperative setting, they are not going to choose to work in that specialty after graduation. In addition, if fewer graduate nurses are looking to obtain employment in the perioperative setting combined with the statistics listed above, Ball et al. (2015) warned that there will be a critical nursing shortage in the perioperative setting.

Background and Need

Educational institutions have modified their curriculum over the years to focus on the National Council Licensure Examination (NCLEX) (Byrne, Root, & Culbertson, 2016). As a result of this modification, Byrne et al. (2016) reported that perioperative education in undergraduate nursing schools has decreased over the last 40 years, to where it is nonexistent in some institutions.

Incorporating QSEN into Nursing Curriculum. The Institute of Medicine (IOM) acknowledged patient safety as one of six areas of care that needs to be improved to advance health care (IOM, 2003). According to Danko (2019), the perioperative setting is an excellent location for students to learn the QSEN core competency of patient safety. For example, the perioperative setting allows students to learn many techniques to increase patient safety such as aseptic technique, sterile precautions, infection control, and interprofessional communication

(Tschirch et al., 2017). Experiencing the perioperative setting allows the students to have a better understanding of what the surgical patient is undergoing and provides for them to provide better pre and post-operative care (Castelluccio, 2012).

Perioperative Nursing Shortage. The lack of perioperative exposure for undergraduate nursing students may contribute to students being less likely to seek a career in perioperative nursing (Castelluccio, 2012). Furthermore, incorporating the perioperative setting into the undergraduate nursing curriculum may allow students to gain an increased understanding of what occurs in the perioperative setting, Gregory, Bolling, and Langston (2014) suggested that clinical experiences in perioperative settings may lead students to realize that perioperative nursing is a specialty worth considering working in. Specifically, increasing the interest in perioperative nursing may offset the retirement of operating room nurses and not lead to a nursing shortage in the operating room setting.

Purpose of Project

Since 2005, when QSEN was developed, there has been an initiative to incorporate all six core competencies into nursing curricula (Cronenwett et al., 2007). Danko (2019) and Tschirch et al. (2017) recognized the challenge of incorporating the QSEN core competencies into already established nursing curricula. In addition, these authors recognized the lack of perioperative clinical experiences and subsequent lack of use of perioperative clinical experiences for facilitation of QSEN core competencies in the area of patient safety.

Tschirch et al. (2017) proposed that the increased retirement of nurses related to the baby-boomer age group reaching retirement age is contributing to an increasing nursing shortage, especially in perioperative settings. Therefore, Tschirch et al. (2017) suggested that

increasing student clinical experiences in perioperative settings may help to alleviate the shortage of nurses choosing perioperative nursing after graduation.

The presence of qualified nursing staff in perioperative settings is currently at risk (Tschirch et al., 2017). In addition, an increased emphasis has been placed on patient safety concerns through the development of the QSEN initiative (Cronenwett, 2007). Therefore, the purpose of this evidence-synthesizing capstone project was to explore and determine how best practices to incorporate perioperative concepts into undergraduate nursing education curricula influence new graduate employment in perioperative nursing.

Evidence-Based Question

In undergraduate nursing students, how does incorporation of perioperative didactic content and clinical experience in an undergraduate nursing curriculum compared to minimal to no perioperative didactic content and clinical experience in an undergraduate nursing curriculum influence the number of nursing students choosing perioperative nursing in the first two years of employment in nursing practice?

Significance to Nursing Education

The QSEN initiative was developed to integrate the IOM's recommendations into nursing education to improve the quality of healthcare (Cronenwett et al., 2007). Incorporating all six QSEN core competencies into nursing curricula can be challenging. However, adding the perioperative setting into the undergraduate nursing curricula would allow students to gain a wide variety of experiences and also would allow schools to incorporate essential QSEN core competencies (Danko, 2019).

Perioperative registered nurses become experts in several skills by working in the operating room (AORN, 2015). According to AORN's 2015 Standards of Perioperative Nursing

(AORN, 2015), the perioperative nursing profession should focus on four areas, patient safety, patient's physiological response and behavioral response to operative procedures, and finally to the healthcare organization where the procedures are occurring. Within these four domains are 16 standards that exemplify the expertise of perioperative nursing. The perioperative nurse uses all sixteen standards daily to create a safer environment for the patient and their family. The perioperative nurse uses education, research, available resources, the nursing process, collegiality, and collaboration to be the ultimate patient advocate (AORN, 2015). Furthermore, exposing undergraduate nursing students to the perioperative setting provides for the students to gain invaluable skills that would be hard for them to learn anywhere else (Tschirch et al., 2017).

Definitions

Didactic. Classroom portion in a class, at minimum involving a lecture component.

Perioperative. The environment before, during, and after surgery.

NCLEX. National nursing exam. An individual must pass this exam to become and work as a registered nurse.

Chapter Summary

In this chapter the background and need of perioperative nursing, the problems currently existing relating to the lack of perioperative experiences being provided for undergraduate nursing students, the significance of the initiation of QSEN and its potential facilitation through perioperative education, and lack of interest of new graduate nurses for perioperative nursing were discussed. An evidence-based practice question and key definitions of terms were presented.

CHAPTER II

METHODS

Patient safety is one of the six core competencies developed by QSEN to improve healthcare through nursing education programs (Cronenwett, 2007). Nursing programs have been encouraged to incorporate the six QSEN core competencies into undergraduate nursing curricula. Perioperative clinical experiences for undergraduate nursing students would provide a venue for accomplishment of QSEN core competencies. However, perioperative clinical experiences have been reduced or eliminated by many schools of nursing (Danko, 2019). In addition, fewer new graduate nurses are choosing perioperative nursing after graduation (Castelluccio, 2011). The purpose of this project was to was to explore and determine how best practices to incorporate perioperative concepts into undergraduate nursing education curricula influence new graduate employment in perioperative nursing. The evidence-based question guiding the project was "In undergraduate nursing students, how does incorporation of perioperative didactic content and clinical experience in an undergraduate nursing curriculum compared to minimal to no perioperative didactic content and clinical experience in an undergraduate nursing curriculum influence the number of nursing students choosing perioperative nursing in the first two years of employment in nursing practice?"

Data Collection Procedures

Databases that were used for the search of evidence were Medline, CINAHL, and Pubmed (See Figure 1). When searching the databases listed, key search terms that were used included perioperative education, perioperative experience, and undergraduate nursing program. At first, articles that were searched for had to be within the last five years, starting at 2015 and
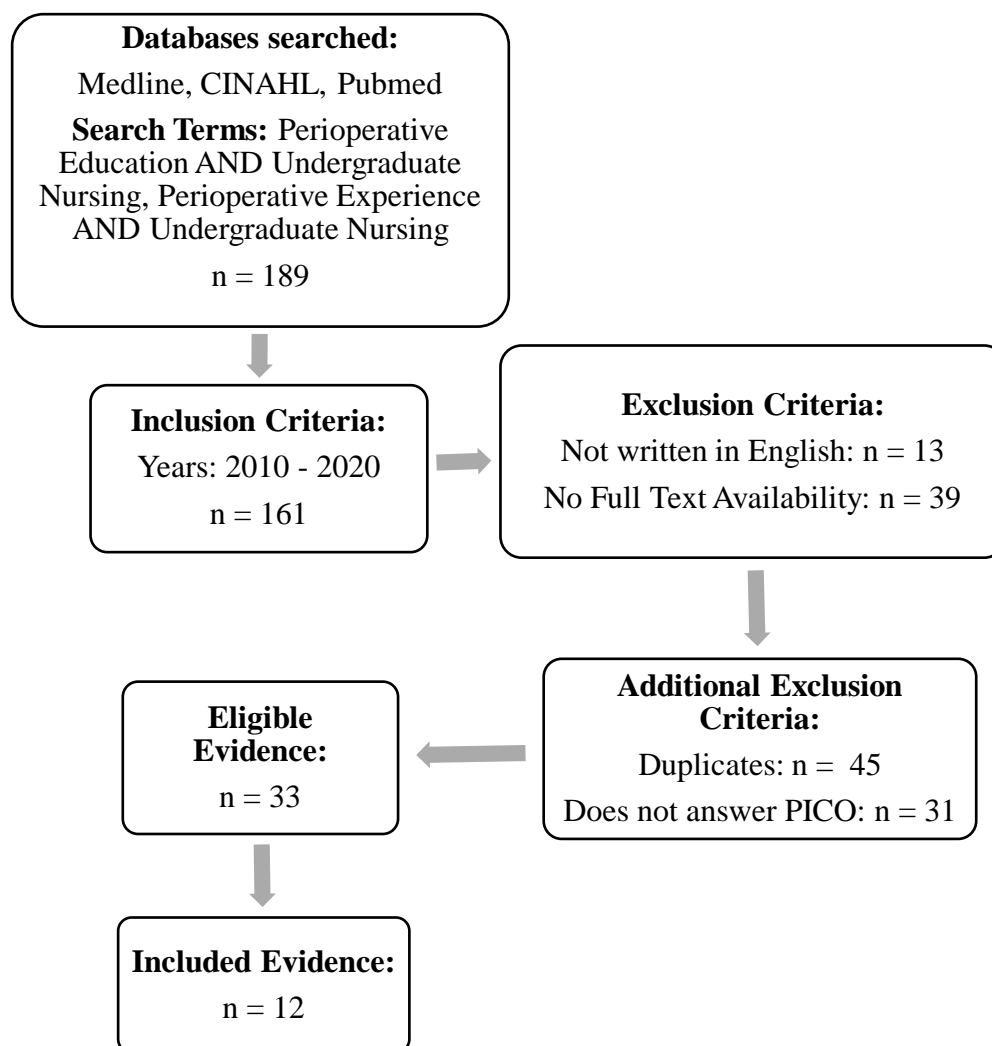
Figure 1. Data Collection Procedure

ending at 2020. Due to the lack of articles found, which consisted of 62 pieces of evidence, the

search was expanded to 10 years, beginning at 2010 and ending with March of 2020.

Inclusion and exclusion criteria. Inclusion and exclusion criteria were then assessed to ensure appropriate pieces of evidence were included in the synthesis. The inclusion criteria that were required of the evidence, was publication year of 2010 or later, key words of perioperative education, undergraduate nursing. Exclusion criteria were that the piece of evidence had not been published in English, was not presented in full text, and that the perioperative education presented in the piece of evidence did not occur in undergraduate nursing education.

Critical Appraisal of Evidence

The Johns Hopkins evidence-based model (JHEBP) (Dang & Dearholt, 2018) was used to appraise the evidence presented in this evidence-synthesizing project In the JHEBP model, there are five different levels depending on the type of evidence. Levels I through III are for research studies. Level I in the JHEBP model includes randomized control trials (RCT) and systemic reviews of RCTs. Level II of the JHEBP model includes quasi-experimental studies, whereas level III includes non-experimental and qualitative studies. Systematic reviews are considered only as high as the lowest level in the review. Level IV and V are for non-research pieces of evidence. Level IV evidence incorporates practice guidelines and consensus panels. Level V evidence includes literature reviews, quality improvement, program evaluations, and expert opinions.

In the JHEBP model (Dang & Dearholt, 2018), quality is based on the level and type of evidence and there are set parameters to determine the quality ranging from the highest quality of grade A to good quality of grade B, and lowest quality of grade C. For example, a quantitative study, which can be a level I, II, or III piece of evidence, grade A quality evidence will be generalizable, will have an appropriate sample size as indicated through a power analysis, will include a literature review that has critical appraisal and is current, and will include the use of

valid and reliable instruments used to collect data, and appropriate statistical analysis will have been used to analyze collected data. Evidence that is grade B quality may or may not include an appropriate sample size, will include fairly consistent results, and include a current literature review with critical appraisal. Grade B quality evidence will not always be fully generalizable. Grade C quality evidence does not meet criteria established for the level of evidence being analyzed and therefore yields results lack integrity.

In qualitative studies, both a single study or a meta-synthesis in JHEBP model is a Level III, the quality ratings are broken down into A/B and then C (Dang & Dearholt, 2018). For a A/B quality the evidence must be transparent with how that data was documented and reviewed, as well as how themes were found. The evidence must also show that there was collaboration with the participants and that the researchers reviewed themselves and the evidence to check for bias. There should also be a linking to current literature with a methodology attached to the study. For a C quality qualitative study, there would not be any of the findings stated above or very few. In regards to a mixed methods piece of evidence, in the JHEBP model the quality analysis is completed for both the quantitative and qualitative portions and then a determination of the best quality rating is provided considering both quantitative and qualitative critiquing criteria (Dang & Dearholt, 2018).

Levels IV and V of the JHEBP model include a variety of different types of evidence. Specifically, level IV consists of clinical practice guidelines and consensus or position statements. An A quality piece of evidence for level IV should be supported by an organization or government agency with either a systematic literature search strategy or documentation of current evidence with consistent results used for the development of the guidelines or statements. For level IV B quality evidence, the criteria are similar to level IV, quality A, but the results are

only fairly consistent. Level IV C quality evidence includes material that is not supported by an organization and the evidence is insufficient and lacks currency. Level V evidence includes integrative reviews, literature reviews, published quality improvement projects, case reports, expert opinion, organizational experiences that incorporate quality improvement projects, financial evaluations and program evaluations. High quality, grade A level V evidence (case reports, integrative reviews, literature reviews, expert opinions, community standards, clinician experience, and consumer preferences) exhibits expertise that is well known and conclusions and recommendations that have a scientific foundation. Level V, good quality B includes expertise that appears reliable, and has arguments for conclusions. Level V, low quality grade C evidence does not include definitive conclusions and there is no indication of expertise being present in the evidence. Level V evidence for organization experience with a high quality, grade A rating includes evidence that has clear aims and objectives that are consistent across many locations or settings with consistent recommendations and conclusions based on results and current sources. Quality B for Level V organization experience includes clear aims and objectives, but only occurs in one setting or location. In addition, grade B organization experiences evidence provides consistent recommendations and conclusions based on the results with mostly current references. Organizational experience quality C does not include indicated aims or objectives and results and recommendations without support from current references.

Chapter Summary

In this chapter the data collection process was discussed including inclusion and exclusion criteria. A corresponding figure was used to highlight the evidence selection. The critical appraisal model that was used to critically appraise the evidence was presented, which was the Johns Hopkins evidence-based practice model (Dang & Dearholt, 2018).

CHAPTER III

LITERATURE REVIEW AND ANALYSIS

The perioperative setting is experiencing a nursing shortage due to retirement and the lack of new graduate nurses choosing to work in the perioperative setting after graduation (Castelluccio, 2011). Incorporating perioperative setting clinical experiences into undergraduate nursing curricula could increase the number of nurses that choose the perioperative setting after graduation and may also allow for the students to be in an environment where the QSEN core competency of patient safety is a top priority and reinforced (Danko, 2019). Therefore, the purpose of this evidence-synthesizing project is to explore and determine how best practices to incorporate perioperative concepts into undergraduate nursing education curricula influence new graduate employment in perioperative nursing. A review of current literature with critical appraisal of 12 pieces of evidence was performed to address the evidence-based practice question "In undergraduate nursing students, how does incorporation of perioperative didactic content and clinical experience in an undergraduate nursing curriculum compared to minimal to no perioperative didactic content and clinical experience in an undergraduate nursing curriculum influence the number of nursing students choosing perioperative nursing in the first two years of employment in nursing practice?" As a result, two themes were identified in the areas of perioperative nursing shortage and incorporating QSEN into nursing curriculum.

Perioperative Nursing Shortage

Ball, Doyle, and Oocumma (2015) stated that the aim of their project was to develop an elective three credit perioperative elective course in an undergraduate nursing program. Specifically, the purpose of the course was to increase the interest of nurses going into the perioperative setting. The goals established for the course were to increase nurse recruitment into

the perioperative setting and to include experiential learning and simulation into the learning environment for undergraduate nursing students. Four perioperative clinical educators, an OR manager, a simulation expert, and a faculty member that had perioperative experience created the perioperative course. The creators incorporated web-based modules developed by the Association of Perioperative Nurses (AORN) which is used to educate RNs who were new to the OR on basic perioperative topics. Eight of the AORN web-based educational program modules (anesthesia, perioperative assessment, scrubbing, gowning and gloving, positioning the surgical patient, safety in the surgical suite, skin prep, surgical instruments, and sterilization and disinfection) were presented to undergraduate nursing students for the elective perioperative nursing course. The eight AORN modules were assigned for completion by the students prior to assigned simulation experiences. The students were split into two groups and rotated between web-based modules, simulation, and clinical hours.

Before implementation of the perioperative course transpired, students and preceptors had to be chosen. The course creators decided only to allow four students for the course, to decrease the stress to the perioperative department. Preceptors were then chosen according to specific criteria that included working in the perioperative setting for at least two years and demonstrated best practices competently, and a willingness to be preceptors to the students. The preceptors were informed of their role of as a preceptor, the expectations of the students, the expectations of the preceptors, and the specific education that the students would be receiving to ensure that the nursing students would receive consistent learning no matter what preceptor the students had.

According to Ball et al. (2015), the implementation of the course started with an introduction of the perioperative environment. Each day's topics and learning built on the

previous day's learning. The students would first complete the web-based module, learn about it in a classroom lecture setting, and then participate in a designated simulation. After completion of the assigned modules and simulations, students were permitted to observe and to practice in the clinical setting.

The students were evaluated throughout the course to determine students' grades. There were three simulation quizzes throughout the course and ended with a final exam. The final exam occurred in the simulation lab and involved two students at a time. One student would act as the circulating nurse, and the other student would act as the scrub nurse. After both performed the assigned tasks, the two students switched roles. During the hands-on examination, the educator asked questions to evaluate the student's knowledge.

An evaluation of the course using the purpose and goals was used to measure the success of the course, which was to increase recruitment in the perioperative setting and to develop a course that included simulation, classroom, and lecture. The course was successful, and two out of the four students were hired into the operating room after graduation. The students' orientation decreased from six to twelve months to four to eight months. To gain feedback on the use of the web-based, AORN modules, and simulation the students ranked the learning experiences using a Likert scale instrument. All modules and educational experiences received high ratings, with simulation and the module Perioperative Assessment as the highest (Ball et al., 2015). The authors included quotes from the students on their experiences in the course. As a result of the positive responses to the course by students, faculty, and preceptors, the course was made into a permanent elective course in the nursing program.

In Dang and Dearholt (2018), a program evaluation is listed under organizational experience and listed as a level V. This article could not achieve an A quality rating due to the

use of only one facility instead of multiple settings. The authors' methodology of development, implementation, and evaluation were detailed in the description. Outcome measures were identified at the beginning of the article, which was to increase the interest in perioperative nursing. At the end of the article, five outcome measures were identified by the authors. Results, including quotes from the students, to ensure that the authors' interpretations were credible. The authors discussed some of the cost-benefit analysis in terms of orientation and hiring. Overall, Ball et al.'s (2015) article exhibited characteristics of a good quality, grade B article.

Nash, Kamel, Sherer, and Nauer (2018) performed a program evaluation. The authors clearly stated their purpose of this study was to determine if the perioperative course would influence the career choices of the undergraduate nursing students four to nine years after graduating nursing school. Nursing faculty and perioperative nurse managers developed a two credit six-week 120-hour course program that involved both didactic and clinical time.

Prior to the implementation of the course, faculty, preceptors and students had to be chosen to participate. Operating Room nurse managers served as adjunct faculty as clinical instructors. All of the OR nurse managers had their MSN in nursing education and had over 30 years of perioperative experience and had experience in nursing education. The requirements of the preceptors consisted of having two to seven years of OR experience and have an interest in working with nursing students. The course was open to junior and senior students in an undergraduate nursing program and had to have completed anatomy and physiology, microbiology, and two clinical nursing courses. The students then had to apply for the course by submitting an application and write a personal essay on their interest in perioperative nursing and goal of course. The students needed a recommendation from clinical instructor. After the

applications were submitted, the students had an interview with nursing faculty. Eight students were selected to participate in the course and were then split into two groups.

The course was held during the summer semester for six weeks and consisted of lecture, web-based modules and clinical experiences. The nursing faculty chose eight AORN modules (perioperative nursing, the surgical environment, perianesthesia nursing, perioperative assessment, sterile technique, safety, positioning the surgical patient, and skin preparation) to administer to the students. The students had to pay for the subscription to Peri-op 101 and completed the computer modules during the didactic section of the course. The didactic portion also consisted of classroom discussion, question and answer, case presentations which the students presented using anecdotal accounts of the patients and procedures followed by debriefings. The course used a preceptor model during the clinical experiences. The nursing faculty discussed with the preceptors what had been taught in the didactic portion and the preceptors tried to align the clinical experiences accordingly. The one group worked primarily in the OR during their course, whereas the second group the students rotated between preop, OR, and the post anesthesia care unit, spending two weeks in each area. Students had to complete weekly reflective journal entries and were presented in didactic portion of the program

Nash et al. (2018) used a qualitative written questionnaire to evaluate the course on the students' perceptions of perioperative nurses' responsibilities. The questionnaire was given before and after the course. Before the course, students described a perioperative nurse's responsibility as assisting the surgeon, preparing the patient, assessing the patient, charting, keeping the patient safety, and educating the patient. After the course, students described the responsibilities of the perioperative nurse as being a patient safety advocate, performing proper patient identification, positioning, and monitoring the sterile field. The students identified several

skills that expanded during the course, such as listening, organization, time management, and leadership skills, along with attentiveness, assertiveness, patient safety, and the ability to anticipate the needs of the perioperative team. Seven of the eight students reported that they would seek a career in perioperative nursing after graduation. Four responded that the OR would be their first choice, one rated PACU as first, and OR second, and two chose the pre-op area as their first choice. One student was hired in the OR after the course, and two others were hired for a paid summer course in the OR.

Nash et al. (2018) clearly stated the purpose of this study was to determine if the perioperative course would influence the career choices of the undergraduate nursing students four to nine years after graduating nursing school. The method of developing the course was described in detail as well as the course itself. The outcomes that were measured in this study was the career choices of the students after graduation, which was fully described with nearly all of the eight students choosing the perioperative setting. Other results were the qualitative questionnaire that the authors gave the students to fill out before and after the course. The results of that questionnaire were described with quotes from the students. The authors' interpretation was accurate and clear with the course having positive outcomes and should be replicated and enlarged to see if those programs would yield the same results. After critical appraisal this level V program evaluation article was rated as being a high quality, grade A piece of evidence.

Messina, Ianniciello, Escallier (2011) performed a program evaluation. The aim of the project was clearly stated by the authors to develop an elective course to introduce undergraduate nursing students to the perioperative setting as active participants and to help more nurses go into the perioperative setting. Faculty members, clinical educators and perioperative managers developed a 15-week elective undergraduate clinical experience for senior nursing students in

their final semester. The authors developed curriculum according to the AORN position statement and with the school's capstone model. The school's capstone model pairs the senior nursing students with expert nurses who had their baccalaureate working in an area of specialization. School faculty acted as mentors and helped students make cognitive connections between their clinical experiences and knowledge domains and inspire critical thinking.

The course consisted of seven nursing students with each student paired with a nurse who had their baccalaureate and worked in the perioperative setting. During the course the students rotated through pre-admission testing, pre-op, OR and post anesthesia recovery unit (PACU). The students were under the supervision of their expert nurse and could scrub and circulate cases. Scrubbing and circulating in cases allowed the students to actively participate rather than be a passive observer in the OR.

The results of the course were that two of the seven students chose to develop their capstone projects focused in the operating room (OR) clinical setting. The OR, which is the last clinical experience for the student and consists of 144 hours. Five of the seven decided not to pursue OR nursing and stated that the OR was not what they thought it would be, but the experience was valuable. Both of the students that chose the OR for their capstone project were hired as OR nurses in the hospital where they completed their clinicals. The two nurses were able to come accomplish orientation faster than nurses who did not go through the perioperative course (Messina et al., 2011).

According to Messina et al. (2011), since the inception of the course, eight nurses who took the 15-week course chose to pursue OR nursing and seven of these nurses continued employment at the time of publication of this article. With seven total staying in the hospital where they were hired, the one only leaving to attend graduate school in a different location, but

remained a perioperative nurse. All of the students were able to complete orientation faster than nurses who did not experience the 15-week course. Therefore, a benefit of the 15-week course was a decreased cost for orienting new OR nurses. All of the students that went through the 15-week program appreciated the experience and stated that it broadened their nursing knowledge and benefitted their ability to provide patient care.

The aim of the project by Messina el al. (2011) was clearly stated by the authors developing an elective course, to introduce undergraduate nursing students to the perioperative setting as active participants to help more nurses go into the perioperative setting after graduation. The method was fully described on how and why the elective course was developed and all of the roles involved in the program. The outcome measures were identified in the aim to increase the number of students going into the perioperative setting after graduation, which ended up being two out of the seven from the first cohort and eight total after three years of the program being in place. The results were fully described, such as the two originally and eight total students going into the perioperative setting. The interpretation was clear and appropriate and used the results make the interpretation and stated that the program was helpful with introducing students into the perioperative setting. On analysis after the firsts course, the authors developed a screening tool, to increase the students who would want to go into the perioperative setting after graduation.

Messina et al. (2011) reported the cost/benefit analysis by stating that the students that went through the perioperative elective course could complete orientation faster which saved the hospital money. Seven of the eight stayed at the original hospital and that save the hospital 264 dollars per nurse in recruitment costs and 288 dollars due to not having to interview the students. The article by Messina et al. (2011) was deemed to be level V with high quality, grade A.

Penprase, Monahan, Poly-Droulard, and Prechowski (2016) performed a program evaluation at a university to determine the utility of a perioperative clinical component for senior level undergraduate nursing students. Specifically, a 14-week, one-credit course was developed with incorporation simulation and clinical experiences and the use of a flipped-classroom methodology for perioperative didactic teaching.

Penprase et al. (2016) explained that the school had an immersion perioperative clinical rotation already in place that consisted of 210 hours, with some students going into the OR with the majority of their time circulating and scrubbing, but also experiencing pre-op, post-op, and anesthesia. Potential students for the one-credit course were notified via email and then were chosen for structured interviews. Faculty was present at the interviews, and the OR managers and clinical coordinators were the ones to interview the students and then students were matched to three possible hospitals. Eighteen students applied for the one-credit perioperative course and eight students were selected for the first cohort. The second cohort had twenty-four students apply, with ten students being selected. The third cohort had twenty-nine students apply, with nine being selected.

Penprase et al. (2016) described that the course involved didactic, simulation, and clinical experiences. The first day of the course the students received a tour, and then attended the didactic component of the course. This didactic instruction included the flipped classroom concept, which required the student to read and understand the information prior to class and that allows the class time to be able to discuss and perform hands on activities, such as opening sterile items, gowning and gloving, and positioning. The simulation section was 40 minutes with 20 minutes for the simulation and 20 minutes for the debriefing. The students were sectioned into

three groups and took roles as either the scrub nurse or circulating nurse. The students then were able to go on to the 210-hour immersive clinical experience in the OR.

The outcome of the program was measured in the number of students that chose to work in the perioperative field after graduation. Out of the first two cohorts, all eighteen students were offered jobs, with 14 accepting positions. The purpose of the study was not clearly stated, however after reading the abstract, introduction and outcome of the article the purpose became clear which was implementing a perioperative course that incorporated the already existing clinical portion along with a didactic and simulation portion to increase students to go into the perioperative setting after graduation and to be able to come off of orientation sooner. The method was described, but not to a full extent. The article did not go into detail of what was specifically taught during the didactic portion or the hours spent in the classroom. The process and outcome measures were identified in detail. The results went into great detail on which students from which cohort went into what type of nursing. The authors even changed their acceptance because of the results that were described, such as students that wanted to go on to become a CRNA. The interpretation was clear that due to the large number of students going into the perioperative setting, that the program should continue, although the authors mention in the beginning that the class acts as the first three months of orientation, they do mention if the students come off of orientation sooner than nurses that do not go through the perioperative elective course. According to the JHEBP model by Dang and Dearholt (2018) this article was appraised as a level V article with a good quality rating, grade B.

Schmidt, Brown, and Holmes (2016) conducted a qualitative study with narrative inquiry. Study participants were chosen from junior and senior nursing students who had completed a three-credit elective clinical nursing course during a specific two-year time frame. A purposive

sample of eligible students was recruited and divided into two different focus groups. One focus group was comprised of nine students and the other group was comprised of 10 students (Schmidt et al., 2016).

After obtaining informed consent from the participants, two researchers conducted the focus group session. One researcher led the focus group and the other researcher recorded field notes during the focus group sessions. A semi-structured interview guide was used to guide the focus group discussions and elicit narrative data. The sessions were audio-recorded and focus group interview data were transcribed after each group's one-hour session.

Schmidt et al. (2016) explained that data analysis was performed by several researchers who independently coded the focus group transcripts. After independent coding was completed, a comparison was made of each researcher's identified coded themes to determine consistencies and inconsistencies in the data analysis.

Schmidt et al. (2016) reported that four themes were identified as a result of data analysis. The four themes identified were perioperative career advantages and disadvantages, student perception paradox and the students became better nurses. The authors then expanded on each theme. The researchers reported that students noted career advantages of perioperative nursing and how the elective course allowed them to think of perioperative nursing as a career choice. In addition, the elective course allowed the students to see the true nature of perioperative nursing and that it was not as chaotic as they had thought. Furthermore, the course allowed students to see what perioperative nurses do every day and the teamwork that is involved.

The second theme elicited from the data analysis was career disadvantages. Specifically, students perceived that perioperative nurses were captives in the operating room and could not

leave the OR and were in one setting for a long period of time. Study participants also stated that they perceived the lack of advancement opportunities in the perioperative setting. Finally, a last component of the second them was students' perceptions of the lack of patient contact in perioperative clinical settings compared to other clinical settings.

Schmidt et al. (2016) noted that the third theme was a paradox of the students' perceptions. Students stated that they liked the teamwork in the perioperative setting, but did not like having to depend on team members. The longevity of nurses working in the perioperative setting was seen as both job satisfaction, but also as monotonous and career limiting. Students noted that they took the course to build nursing skills, but they also perceived that if they worked in the perioperative field, they would lose their skills and abilities to manage multiple patients. It was noted that the paradox was not recognized by the students but expressed by the researchers after coding the data.

The fourth theme was the consensus among study participants that the course made them better nurses. According to the data elicited from the study participants in the two groups, the course influenced them into becoming a better nurses, with enhanced ability to provide effective patient care when working with surgical patients.

Data elicited from each focus group revealed similarities and therefore, Schmidt et al. (2016) reported that data saturation was achieved with the data analyzed from the two focus groups. In addition, to provide credibility to the data collection procedure for the study, an audit trail was established. Furthermore, the purpose of the study was clearly described and the research question was clearly and definitively stated. Schmidt et al. (2016) explained that a qualitative narrative inquiry design was chosen for the study to elicit experiences from participants that might not be otherwise discovered about their experiences and perceptions

gained through the elective perioperative course. However, this phenomenon of interest could have been explained more overtly in the article. The demographics of the sample included female junior and senior nursing students with a mean age of 20.25 years of age. Seventeen of the 19 participants were Caucasian with two participants being Hispanic. None of the participants had experience in the perioperative setting before the taking the elective course. The quotations transcribed from student responses during the focus group session supported the four themes identified by the researchers. From the qualitative data analysis, Schmidt et al. (2016) concluded that although the perioperative nursing course did not influence the students' career choice for perioperative nursing, the perioperative course did create student awareness of what it would be like to work in the perioperative setting in the future. Study findings indicated that students perceived increased confidence with nursing skills and teamwork after taking the perioperative course. Schmidt et al's (2016) study was determined to be level III evidence with a good quality rating of grade B.

Schmidt and Brown (2019) performed a non-experimental mixed-methods study to determine if taking an undergraduate perioperative nursing elective influenced nurses' career choices four to nine years after graduation. The researchers contacted all nurses that attended one private university in the Midwest and completed a perioperative nursing elective in either their junior or senior year. The researchers received 50 names and could find 49 addresses. Twenty-three individuals returned the survey with a response rate of 48.9%.

The data were collected by completing a survey sent through the mail. Schmidt and Brown (2019) reported that the survey instrument was meant to collect qualitative data. Therefore, no reliability or validity statistics were reported for the survey instrument. The

authors noted that the data retrieved from the instrument provided responses that answered the research question for the study.

Schmidt and Brown (2019) reported that 26% of the nurses who responded to the survey were working in the perioperative field. One went into perioperative nursing right after graduation, the others went into the perioperative setting two or three years after working in another specialty. All of the respondents thought that the elective was beneficial. No matter what specialty the students went into they believed that they could perform certain skills more effectively, especially in regards to sterile technique and communicating with patients and families about surgical procedures as a result of their undergraduate perioperative nursing course.

The major threat to internal validity of quantitative portion of Schmidt and Brown's (2019) study was the questionnaire in the form of instrumentation. Another threat to the internal validity of the study of the quantitative portion of the study was the sample size, since no power analysis was performed. For the qualitative portion of the study, no data saturation was specified so determination of the adequacy of the sample size could not be established. Schmidt and Brown's (2019) study was therefore found to be a level III piece of evidence with a good quality rating grade B.

Incorporating QSEN into Undergraduate Nursing Curriculum

Bashaw (2016) performed a program evaluation. The aim of the project was clearly stated as developing a high-fidelity simulation into an undergraduate nursing program's perioperative elective course. Nursing faculty from a Midwest university developed a simulation experience for a perioperative elective course. The faculty members who developed, ran, and evaluated the simulation experiences had their OR certification (CNOR). The simulation was based on Jeffries

simulation framework, which requires active involvement from the students along with feedback and debriefing afterwards. The simulation was held in a mock OR with a high fidelity mannikin to create a realistic environment. The researchers developed a malignant hyperthermia (MH) simulation scenario because MH is a high-risk, low-volume emergency in the perioperative setting.

The authors determined several objectives that would guide and be used to evaluate the simulation, such as assessment of irregularities, participation, patient safety, and correct nursing interventions. The students were given roles prior to the start of the simulation such as circulating nurse, scrub nurse, and nurses who come in after MH is discovered. The students had a twenty-minute introduction to the simulation scenario and review of the patient chart. The simulation lasted sixty minutes and included the students in their respective roles as well as one faculty member acting as the surgeon. During the simulation, the students had to use several skills, such as assessment, knowledge of different acute and chronic illnesses, and communication. Once the students performed the orders that were given to them once it was discovered the patient had MH, the simulation progressed until the patient was going to be transferred to PACU.

Following the simulation, a debriefing session was completed for forty minutes. Nine students participated in the simulation and evaluated the simulation afterwards qualitatively during the debriefing. The researchers asked open ended questions to discuss how the students felt about learning in a simulation environment their different roles during the simulation. The faculty gave effective feedback during the debriefing using the QSEN competencies. The students stated that they felt stressed and confused when the scenario first began to became an

emergency, but stated that it was a positive experience. All of the students participated in the scenario and completed the required objectives of the simulation.

The aim of the project was clearly stated as developing a high-fidelity simulation into an undergraduate nursing program's perioperative elective course. The method was fully described including the simulation framework, simulation process and timeframe. The outcome measures were clearly identified before and after including the results. The results were not fully described, but stated with minute detail. The interpretation was clear and appropriate and based on the feedback from the simulation evaluation and debriefing answers from the students. There is not a cost-benefit analysis stated for this project, but the author did state financial considerations for a simulation project such as the cost for the high-fidelity mannikin and mock OR. According to the JHEBP model by Dang and Dearholt (2018) this article is a level V B.

Gregory, Bolling, and Langston, (2014) performed a program evaluation. The aim of the project was clearly stated as developing a perioperative course that introduces undergraduate nursing students to the perioperative field. The practicum that was created was one and a half credits and offered in the summer between junior and senior year including 180 clinical hours.

Prior to the implementation of the course, two perioperative nursing leaders were hired as adjunct faculty members and acted as clinical instructors. Both clinical instructors had their MSN, with one having a post certificate in nursing education.

The implementation of the course process started with and before the clinical portion of the course, the students participated in simulation for OR scenarios such as patient assessment, 12 lead EKG, scrubbing, gowning and gloving. Students rotated through the acute hospital OR, PACU and Pre-op as well as the OR and PACU in the surgery center. Students had direct patient

care as well as observing a charge nurse in each area to understand effective communication, responsibility, and delegation.

The students had several responsibilities throughout the course. The students attended daily debriefing conferences as well as morning report, and safety huddles. The students were responsible for reviewing the patients' history and physical, and consent alongside their assigned preceptor. The preceptors met with the student's daily in post clinical conferences to reflect on the day and focused on the clinical experience in relation to their objectives and accomplishments and barriers. The entire cohort met with the clinical instructors every Friday to discuss their week. The students had to perform an evidence-based practice (EBP) project that affected one of the units that they rotated through. The preceptors approved of the EBP project topic with the faculty reviewing them as well.

The author's used two outcome measures to identify the success of the course. The two outcomes were having students sign up for the course and having positive evaluations of the course. The course has been running for several years and over 120 students have taken the course and have added additional elective perioperative courses each year, totaling three courses that a student can take. A total of 13 students have taken all three perioperative courses that are offered and three of which have gone one to be advanced practice nurses and two are working in surgical services. The authors listed positive quotes from the students on enhancing their knowledge of patient safety.

The aim of the project was clearly stated as developing a perioperative course that reintroduces BSN students to the perioperative field. The method was fully described, from the collaboration and development of course to pre work and then into the requirements for the students during the course. The outcome measures were identified as having students sign up for

the course and having positive evaluations of the course. The outcome measures had positive

results of both enthusiastic sign up and positive evaluations. The interpretation was clear and

appropriate based on the results with using the student and faculty evaluations to change the

program from year to year to yield the best results. Gregory et al. (2014) is a program evaluation,

which according to Dang and Dearholt (2018) is a level V, and according to the quality measures

it is a B quality.

Danko (2019) completed a quasi-experimental pre-posttest study after developing a

perioperative course in an undergraduate nursing program. There was a total of 46 junior level

undergraduate nursing students at the university eligible to be a part of the study, with 44 who

participated in the study.

To develop an instrument to evaluate safety knowledge the author met with a nursing

organization that the university was partnered with for test creation. However, none of the

questions were perioperative specific. The researcher then reviewed the test bank and focused on

safety knowledge questions, such as multiple patient scenarios. The researcher found the

questions for the test by using a Likert scale ranging from 5 to 1 for choosing appropriate

questions, with five being the most appropriate for the perioperative setting. The questions were

narrowed down from 92 questions to 34 by the author. The 34 questions were then given to

content experts and given the same Likert scale. Any questions that achieved a score of over 7

went into the test given to the students. The safety knowledge test was given before and after the

perioperative course.

The perioperative course involved didactic, simulation, and clinicals. The pretest was

given on the first day at the beginning of class, with the posttest given on the last day after the

final content was provided to the students. An online testing site was used for the pre and posttests, which the students were already familiar with and used in other nursing classes.

The raw scores were provided on the nursing organization testing website and the author did not look at the scores until the post tests were given. The results of the pre and posttest were analyzed using the SPSS software to calculate the mean, median, standard deviation, minimum and maximum test scores, skewness and kurtosis. The author used Kline's guidelines for skewness and kurtosis to assess normality. The author uses a paired sample t test to compare the pre and posttest. The nursing organization testing site had an inter-reliability by the National League for Nursing Accrediting Commission. Employees from the nursing organization completed two reviews of the newly developed test and the percentage of the QSEN categories ranged from 67% to 75% and 63% and 75% exhibiting good inter-rater reliability. Nursing faculty and content experts evaluated and re-evaluated the reliability and validity of instrument although there was no Cronbach's alpha number specified.

The mean of the pre-test was 65.6% and the mean of the post-test mean was 70.6%, which displays the course increased safety knowledge. The results from the two-tailed t test were (t (43) = - 3.97, p < .001). The skewness was -0.347 for the pre-test and post-test of -0.148. The kurtosis was -0.613 for pre-test and -0.110 for post-test. The mean of the post-test increased from the pre-test at a statistically significant rate of p < .001.

The author included a literature review section to the paper, but did not specify what were the gaps of knowledge of perioperative education in undergraduate nursing programs. The author focused on QSEN and the lack of patient safety in the undergraduate nursing program. The author stated that there was a lack of quantitative studies of perioperative education in undergraduate nursing programs. The purpose of the study was clearly written as what effect

would the perioperative nursing course on junior baccalaureate nursing students have on their safety knowledge using a safety knowledge pre and posttest. The majority of literature reviewed was not current, although half of the literature was either seminal or within five years of the publication date. The sample size was 44 students and the author stated a limitation as the sample size and did not run a power analysis. The author did state how the data was collected and analyzed clearly, which was with a nursing testing site, with specified questions at the beginning of the first class and at the end of the last class. While a Cronbach's alpha was not done or discussed, the author went into detail on the inter-reliability and validity of the instrument. The results were presented clearly in the results and discussion section along with a table that presented the same results. The author stated several limitations of the study, such as the small sample size, no control group, variety of clinical sites, and lack of a true reliability test on the instrument. Internal threats to this study were the sample size and the instrument that was used. The author stated that the instrument had inter-reliability and validity, but then stated that there was no reliability test done on the specific instrument used, which is an internal threat to validity to the study. An external threat was the multitude of clinical sites and preceptors that were used for the student's clinical days. The author does not state if the all of the preceptors were trained prior to the study to see if there was standardization in teaching. The study done by Danko (2019) was a quasi-experimental, which is a Level II in the JHEBP model by Dang and Dearholt (2018). According to the criteria listed above, the study by Danko (2019) is considered a B.

Foran (2015) performed a non-experimental study. The purpose of the study was clearly presented as to determine the knowledge of pre and postoperative surgery in nursing programs. The author contacted universities that had undergraduate nursing curriculum and had an appropriate perioperative education model. The result was ten schools. Six of the ten schools

accepted to participate in the study. One school had an elective model, one had an on-line model, two had a core curriculum model, and two had a mixed model.

A knowledge tool of 20 multiple choice questions was developed by being reviewed by ten experienced perioperative registered nurses that had at least 2 years of perioperative experience. A few topics were removed and some were added during this review. Content validity was reviewed by senior OR nursing staff, OR nurse managers and surgical services director and the education manager. The third group to review was 20 senior experienced OR nurse educators. The assessment tool was first used on 154 undergraduate nursing students prior to being sent out. No Cronbach's alpha was listed for the validity or reliability of the tool. The topics of the questionnaire included patient education, pre and post-operative nursing care, infection control, and postoperative pain management. The researcher sent the survey to all final year nursing students from the six universities. 332 students responded. The questionnaire asked what type of perioperative education the student went through and how well they scored on the knowledge assessment test.

The data were collected from the surveys that were returned and inputted into SPSS. The independent sample t-test was used to compare the differences between the knowledge scores of those who had guided versus non-guided practical experience in the perioperative setting. A one-way ANOVA test was used to compare the score and the education model. A Kruskal-Wallis test was used with post hoc testing using a Mann-Whitney Mu that compared the score and the pattern mix.

The results of the surveys were that there was a statistically significant difference between the student's scores that had guided vs non-guided perioperative experiences. With guided operating theatre experience having higher knowledge scores ($p < .001$). A post-hoc

Tukey test revealed that there was a statistically significant difference between the score of the test and the difference of having an elective model with 40 hours of guided experience versus no experience (p< .006). The students who had guided experience, theory practice, and extra practice had a higher score compared to non-guided, theory and no experience. There was a positive correlation with statistically significance (p < .002) showed that there was a difference between test scores and the number of hours spent with plateauing at 40 – 60 hours. The study found that students that had a guided operating room experience had a higher score on the knowledge test. The study also found that 18.3 % had no experience in the operating room and 28% had less than half a day spent in the operating room.

The knowledge gap was addressed in the literature review. The purpose of the study was clearly presented as to determine the knowledge of pre and post-operative surgery in nursing. The majority of the literature review was either current, meaning within five years of the article's publication or was seminal evidence. The sample size is ample at 332 respondents, with a confidence level of 5.98 however the researchers did not state the response rate of the surveys. The data collection is detailed, with the type of questions on the questionnaire and the reasoning and validity of the instrument. The author went through extensive review process on content reliability and inter-reliability with three review processes. However, the author did not specify a Cronbach's alpha score. The results were presented clearly with the students that had a guided model education achieving the highest scores of the knowledge test compared to every other education model. The author did not include any limitations in the study, but did come to the accurate conclusion compared to the results.

Internal threats to validity are that no Cronbach's alpha calculation for the instrument was used for the survey. Another internal validity threat is the lack of the author stating the

survey response rate. While 332 respondents seem like a high number and a sufficient response, it is unsure what the original number of surveys that were sent out were. External validity to the study is that the knowledge test was sent out in a survey and the respondents could look up the answers to the knowledge test and could have skewed the results of the knowledge test. The article by Foran (2015) is a level III with a B quality according to the JHEBP model by Dang and Dearholt (2018).

Tschirch, Leyden, Dufrene and Land (2017) performed a program evaluation. The researcher developed a perioperative clinical course as the first clinical course for undergraduate nursing students. The authors chose the perioperative setting because it is underutilized and it gave the students a chance to observe a setting where asepsis, patient advocacy, patient safety, and teamwork is the highest priorities. The perioperative setting is also highly structured with a lot of skill repetition and would be beneficial for the students.

Prior to the implementation of the course preceptors had to be chosen. The researchers decided to have a preceptor model for the clinical portion of the course and held a preceptor workshop for the preceptors that would be used for the course.

The course involved simulation, clinicals, web-based modules and classroom lectures. During the simulation portion of the perioperative course, the students had to learn how to perform a surgical scrub, open sterile kits with proper aseptic technique, insert IVs, perform IV drip calculations, hang IV fluids, perform blood draws, and insert indwelling urinary catheters. Students had to practice and be validated on their competency on these skills prior to starting their clinical rotations. The researchers decided on using the Peri-op 101 web-based modules that were created by AORN that had to be completed prior to the beginning of the course. There were ten computer modules (introduction to perioperative nursing, the surgical environment,

perianesthesia nursing, perioperative assessment, sterile technique, safety in the surgical suite, scrubbing, gowning, gloving, positioning the surgical patient, skin preparation, sterilization and disinfection) that the researchers chose to be completed by the students. The student's clinical experience consisted of six days rotating through the OR, Pre-Admission Testing, Pre-Op, PACU, and Endo. The students practicing the skills that they had learned during simulation, as well as positioning patients, teamwork and collaboration, and communication skills.

The students were evaluated throughout the course using clinical reflective journals and clinical objectives. The students wrote six reflective journal entries, five to identify meaningful experiences and the sixth was a synthesis of their clinical rotation. All of the clinical reflection journals were peer critiqued and graded using a rubric. The students had 13 clinical objectives that were used twice during the clinical rotation to assess skills. All of the students passed the clinical objectives both times they were assessed.

The course was evaluated by the authors by the positive evaluations that were received from both the students and the preceptors and that all students passed the clinical objectives both times during the course. The authors included several student quotes regarding the positive evaluation of the course and the increased knowledge of patient safety that they learned during the course, especially in reference to teamwork, infection control, and patient positioning.

The aim of the project was clearly stated as developing a perioperative nursing course as the first clinical course in a BSN program. The method was fully described including the prior thought process by the dean of the BSN program, as well as the faculty and nursing administrators. The method was fully described through the development of the preceptor course and pre work for the students and ending with the student's clinical experiences and required clinical journals and evaluation. The outcome measures were identified as the 13 evaluation

objectives that were completed twice with all students passing. The interpretation was correct, it used the results of the positive evaluations from the students and preceptors and passing clinical objectives and the school continued the course as the first clinical course for BSN students. There was a cost-benefit described, with the authors stating that the preceptor course was the part of the project that cost the most, followed by the Peri-op 101 program. The nursing administration and faculty feel that the benefits of the course outweighed the cost. According to the JHEBP model by Dang and Dearholt (2018) this article is a level V A.

Wang, Shi, Bai, Zheng, and Zhao (2015) was a mixed method study with randomized controlled trial and qualitative method based on grounded theory. Faculty developed an interprofessional education (IPE) program involving third year nursing students and fourth year medical students. 55 female third year nursing students were randomly selected and placed into two groups. 28 nursing students were placed in the IPSE group and 27 in the traditional course group. All students were students from a Chinese Medical University, with the mean age of 21 years old. 46 fourth year medical students from the same university were also used in the IPSE groups. The first group was in the control group and kept in a traditional course group where the nursing students were instructed to practice OR nursing skills under the supervision of an experienced instructor in a simulated OR. The second group was an interprofessional simulation-based education (IPSE) program.

The IPSE group then split into smaller groups consisting of one to two nursing students and three to four medical students in each group. The smaller groups performed a simulation scenario and performed surgical procedures on anesthetized animals. Before the study began, approval was obtained from the ethics committee and then the students that chose to participate signed consent forms. There were three set surgical simulation scenarios, appendectomy,

splenectomy, and a small bowel resection and anastomosis. Each surgical scenario lasted three hours. Nursing and Medical school faculty reviewed each scenario. Each student participated in at least two scenarios. The nursing students acted as circulating nurses and scrub nurses and the medical students acted as surgeons. During the scenarios the students interacted with one another and learned from one another, while the supervisors where there to help the students at a minimal level.

The researchers used multiple ways to evaluate the groups. The researchers used the Readiness for Interprofessional Learning Scale (RIPLS) to measure how the nursing students felt towards interprofessional teams and readiness for IPE. The RIPLS was completed before and after the activity and had 19 questions that were based on a Likert scale. Open ended questions were then asked of the nursing students, to identify their perceptions of the IPSE program and what knowledge they learned about OR nursing and their attitudes toward shared learning. The final assessment that the students had to complete was a 20-question questionnaire that was used to validate the student's knowledge on OR nursing, such as infection control, patient safety.

The quantitative data was collected using the scores from the RIPLS test pre and post program, and the OR knowledge test which was performed after the education. A Wilcoxon signed rank test was used to compare the differences between the scores of the RIPLS test before and after the IPSE program. An independent samples t-test was used to analyze the differences between the student's knowledge score between the IPSE and control group.

The qualitative material was inputted into a word-processing tool and was analyzed and coded looking for themes and sub themes. Two authors analyzed the qualitative information independently and afterwards compared themes that both authors identified. Any discrepancies

were discussed and agreed upon four different themes. The open-ended questions were analyzed using qualitatively.

The RIPLS instrument was valid and reliable with a cronbach's alpha of 0.90 in English. The tool was not available in Chinese, so the tool was translated from English to Chinese and then back to English by separate translators. The researchers then analyzed the two translations to see if there were any changes to the questions that would skew the results. Five experts agreed that there was validity with the Chinese version with the Cronbach's alpha of 0.91. Five experts confirmed content validity of the OR knowledge assessment with a Cronbach's alpha score of 0.86.

Before education there was no statistically significant difference in the RIPLS scores between the control and IPSE groups. After the intervention four of the questions had statistically significant differences in the IPSE group, evidenced by the p levels. The four questions that had statistically significance were question 3 (p=0.046), question 7(p=0.040), question 13 (p= 0.023), and question 14 (p=0.013). The IPSE group had a mean score of 83.50 in the OR knowledge test, whereas the traditional group had a mean score of 77.00. The four questions that ranked statistically significant demonstrate improved attitudes toward teamwork and collaboration. The IPSE group scored higher in OR knowledge test higher than the traditional group.

Four themes were found by the researchers which were the importance of communication between the students, allowed the nursing students to understand their roles in the OR and with other health care team members, students learned better in a safe environment, and that using IPSE in the future would allow nursing students to learn better.

The authors provided a brief synthesis of the knowledge gaps about OR education in undergraduate nursing programs and IPSE. The purpose of this study was clearly presented as developing a program that encompasses interprofessional simulation education and to evaluate the student's attitudes toward IPE and their knowledge of OR education. Less than half of the literature was within five years of publication date. There was 55 nursing students and 46 medical students, however the medical students were not included in the evaluation of the study. With a total of 55 nursing students, there was 27 and 28 in the control and intervention group, and no power analysis was done.

There was a control group, which was the traditional group and they practiced OR skills individually under the supervision of a faculty member. The demographics were similar in both groups, with all students being females and from the same university. The data collection methods were clear. The reliability and validity of the instruments that the researchers used and assessment methods of the reliability and validity was clearly stated. Both instruments were over the required 0.70 Cronbach's alpha at 0.91 for the RIPLS and 0.86 for the OR knowledge test. The results were presented clearly using the result numbers along with the p level to show statistically significance. The table that was included in the evidence could be understood along with the results, but the researchers used question numbers in the results section and the question itself in the table without the number being listed. The authors did not state the limitations to their study. Their conclusion was based on the results that using IPSE methods could increase teamwork and skills.

The researchers used a mixed method approach, incorporating a qualitative portion in their study using open ended questions. The purpose was specified above, but the researchers did not include a research question or why they chose the grounded theory. Study participants were

all females and similar in age, and target population demographics were not specified. The authors were all nursing faculty members. The researchers did not state that there was saturation of the data. Two of the researchers analyzed the qualitative data and compared the codes and notes manually. The four themes were supported by quotes from the nursing students. There was no research question stated but the data collection and analysis spread from the purpose statement.

The conclusions were fully explained and based on the results of both the qualitative and quantitative studies. The biggest threat to internal validity is the small sample size. The quantitative portion had no power analysis performed to determine if the sample size was sufficient and there was no data saturation noted in the qualitative portion of the study. Another internal threat to validity is the demographics, all participants were females and the researchers did not state if that was the specified demographics of the university. According to the JHEBP model by Dang and Dearholt (2018) this article is a level III B.

Chapter Summary

There was a total of twelve articles that were reviewed in this evidence synthesis project. Over half of the evidence reviewed were program evaluations totaling seven pieces of evidence ranging from a quality of A or B. There was a total of five research articles reviewed. One mixed method study that involved both a qualitative study and a randomized controlled trial. Two pieces of the evidence were from two perspectives of the same research project, the first was a qualitative study and the second was a non-experimental study. The last two pieces of evidence were a non-experimental study and a quasi-experimental study. All of the pieces of research evidence were either an A or B quality. All of the articles that were reviewed exposed undergraduate nursing students to the perioperative setting and had outcomes of either increasing

the skills of an undergraduate nursing student or increasing the number of undergraduate nursing students that worked in the operating room after graduation.

CHAPTER IV

RESULTS AND SYNTHESIS

Incorporating the six QSEN core competencies into undergraduate nursing curricula has been encouraged since the inception of QSEN in 2005 to improve healthcare (Cronenwett, 2007). The six core competencies of QSEN are patient-centered care, informatics, evidence-based practice, quality improvement, teamwork and collaboration, and patient safety. According to the AORN (2015) perioperative nurses use all six of the QSEN core competencies in daily practice. However, undergraduate nursing programs have limited to no perioperative clinical experiences in the undergraduate nursing curricula (Danko, 2019). The perioperative field is experiencing a nursing shortage due to experienced perioperative nurses retiring and less graduate nurses choosing perioperative nursing after graduation (Castelluccio, 2011).

Results

There was a total of 12 articles that were synthesized, ranging from level II to level V using the JHEBP model (Dang & Dearholt, 2018). One of the articles was a level II and was a quasi-experimental article. Four of the articles analyzed were level III. Two of the four level III articles were non-experimental articles. One of the four level III used a qualitative method. The last level III article was a mixed-method article incorporating a randomized-controlled trial and qualitative method. Seven of the 12 articles were level V articles. All of the level V articles were program evaluations.

The majority of the 12 articles reviewed were a B quality. Only one article was leveled at a level II and had a B quality rating. The reasoning of the B quality was the small sample size used and lack of a reliability test on the instrument used during the study. All four articles that were leveled at level III were given a B quality rating. The two non-experimental articles

performed no reliability or validity test on the instruments that were used during the studies and had small sample sizes. The qualitative study was almost an A quality rating because the authors mentioned data saturation, however the researchers had no more qualified participants if data saturation was not achieved. The mixed-method study attained a B quality rating due to a lack of description of simulation programs and no power analysis completed. The mixed-method study's participants all came from the same university and there was a lack of generalizability. For the seven articles that were leveled at level V, two of the articles achieved a quality rating of A. Both articles had small sample sizes, but met the rest of the JHEBP criteria for program evaluations. The five other level V articles had a quality rating of B. All of the program evaluation articles had small sample sizes, and as well as lacking details on outcome measures or methods lead to the quality rating of B.

Quasi-experimental studies are a level II in the JHEBP model. Specifically, Danko (2019) presented the influence of a perioperative course offered to undergraduate nursing students for the promotion of safety knowledge. The researchers created a safety knowledge test that was administered before and after the course. The mean score before the perioperative course was 65% and the mean after the course was 70%. The increase of the scores was statistically significant and showed increased knowledge of patient safety related to students' participation in the perioperative course.

There were four articles leveled at a level III in the JHEBP model. Two of the four were non-experimental studies (Foran, 2016; Schmidt & Brown, 2019). For both studies, questionnaires were sent to individuals who had completed a perioperative course during their undergraduate nursing program. Findings indicated that individuals who had a guided or structured course had more safety knowledge compared to individuals who only observed in the

Table 1. Article level and quality table

Level	Number of Articles	Quality
Level II	I	B
Level III	IV	B
Level V	VII	B

perioperative setting. The other non-experimental study also found that individuals could perform certain skills better because of the perioperative course. The skills listed were sterile technique and being able to talk to patient and families about surgical procedures. In their level III qualitative study, Schmidt et al., 2016 found four themes from data analysis after interviewing students who had completed a perioperative course in their undergraduate nursing program. Those four themes were perioperative career advantages and disadvantages, student perception paradox and became better nurses. In the mixed-method study by Wang et al. (2015), the research found that students who were in the simulation group reported the most realistic representation to the perioperative setting. These students scored higher on the interprofessional learning scale and had increased knowledge of operating room nursing (Wang et al., 2015).

Program evaluation evidence is deemed to be level V evidence (Dang & Dearholt, 2018). Seven program evaluations were reviewed for this project. The implementation of the program evaluations presented in the articles varied. Six out of the seven articles reported on the development of a perioperative course that was held during a semester with incorporated didactic learning along with clinical experiences. Three of these six articles also incorporated the AORN Peri-op 101 web-based modules. The length of the courses also varied with two out of the six held in summer semester, one during a one-month long winter semester, and four held during fall

or spring semester. The students reported acquiring several skills such as teamwork, better listening, organization, time management, leadership, patient safety, attentiveness, assertiveness, patient, and anticipating needs. One of the seven articles used a simulation experience. Of the articles (Ball et al., 2015; Messina et al., 201; Nash et al., 2018; Penprase, 2016; Schmidt & Brown, 2019; Schmidt et al., 2016) that used students choosing to work in the perioperative setting after graduation as an outcome measure, one or more students chose to work in the perioperative setting. All reviewed evidence presented for this project (Ball et al., 2015; Bashaw, 2016; Danko, 2019; Foran, 2015; Gregory et al., 2014; Messina et al., 201; Nash et al., 2018; Penprase, 2016; Schmidt & Brown, 2019; Schmidt et al., 2016; Tschirch et al., 2017; Wang et al., 2015) reflected positive evaluations from students, faculty, and preceptors if used.

Synthesis of Results

The twelve articles that were synthesized all implemented or evaluated students that had completed a perioperative course in an undergraduate nursing program. The articles focused on one of two themes. The first theme was incorporating QSEN core competencies into the undergraduate nursing curriculum and having the students gain increased skills in the six QSEN core competency areas, mostly patient safety. The second theme was increasing the number of new graduate nurses that chose to work in the perioperative setting after graduation to combat the perioperative nursing shortage. All of the articles that focused on the perioperative nursing shortage, achieved at least one graduate nurse choosing to work in the operating room after graduation. The articles that focused on increasing QSEN core competency skills for undergraduate nursing students accomplished this by either patient safety knowledge test scores increasing or student admission of being able to perform skills better after having completed a

perioperative course. The perioperative course was completed a variety of ways, however the students and faculty had positive feedback from all pieces of evidence.

Chapter Summary

Discussed in this chapter were the levels and quality of evidence that was found during the critical appraisal process. Twelve articles in total were used for the evidence appraisal and were levels II, III, or V with a quality rating of A or B. The twelve articles all fell in two themes of either incorporating QSEN core competencies into undergraduate nursing curricula by increasing the skills shown by the nursing students or increasing graduate nursing students' interest in the perioperative setting.

CHAPTER V

DISCUSSION AND CONCLUSION

The perioperative setting is experiencing a nursing shortage for many reasons, one of which is the decrease of new graduate nurses choosing to work in the perioperative setting after graduation (Castelluccio, 2011). Incorporating the perioperative setting into the undergraduate nursing program curriculum could increase the number of nurses that choose the perioperative setting after graduation. In addition, the perioperative setting provides an environment where the six QSEN core competencies can be focused upon (Danko, 2019).

Discussion of Findings

The purpose of this evidence-synthesizing project was to explore and determine how best to incorporate the perioperative setting into the undergraduate nursing curriculum to increase the number of new graduate nurses working in the perioperative setting. Using the evidence-based practice question "In undergraduate nursing students, how does incorporation of perioperative didactic content and clinical experience in an undergraduate nursing curriculum compared to minimal to no perioperative didactic content and clinical experience in an undergraduate nursing curriculum influence the number of nursing students choosing perioperative nursing in the first two years of employment in nursing practice?" Of the 12 articles that were critically appraised, seven of the articles answered the evidence-based practice question. These seven articles all used a variety of one or more of the following methods; didactic, simulation, web-based modules, and clinical experiences. The other five articles that were critically appraised, focused on incorporating the QSEN core competencies into undergraduate nursing programs. Five articles found that students who had completed a perioperative course increased several skills. Some of the skills found in the evidence synthesis were an increase in teamwork, better listening, better

organizational skills, increased time management, attentiveness, assertiveness, and being able to better anticipate needs.

Implications of Findings

The skills identified by the authors are ones that help incorporate the six QSEN core competencies, especially patient safety. The skills that the students listed, are also very similar to the daily skills that perioperative nurses perform according the 2015 AORN Standards of Perioperative Nursing. These increased skills and causing graduate nurses to have increased interest to work in the perioperative setting causes two recommended changes for practice. One recommended practice change came as a result of this evidence-synthesizing project. The recommended practice change is to incorporate the perioperative setting into the undergraduate nursing curriculum. Incorporating the perioperative setting effects two areas in a positive way. The two areas correlate with the two themes found in the critical appraisal. Incorporating the six QSEN core competencies, especially patient safety into the undergraduate nursing curriculum is the first positive effect that incorporating the perioperative setting into the undergraduate nursing program accomplishes. The second positive effect is exposing undergraduate nursing students to the perioperative field increases the number of new graduate nurses that choose to work in the perioperative setting. While all of the articles fit under these two themes and all had positive results, there was a variety of ways that was done to accomplish these effects.

Limitations for Consideration

There were a few limitations for consideration. All of the articles that were critically appraised had limitations in two areas, sample size and validity of tools used. The perioperative environment does not lend to having a large number of students due to AORN guidelines of traffic control (AORN, 2020). Most facilities limit the number of individuals in an operating

room for several reasons, most of which is to decrease the risk for surgical site infections. Along with the sample size, many of the articles used only one hospital and university, therefore not allowing for generalizability.

Identified Gaps in Findings

A gap in findings that was found in this critical appraisal was the large amount of non-research program evaluations that were found and the small amount of research evidence that has been done on this topic.

Chapter Summary

In this chapter the findings, implications of findings, limitations, and gaps in the findings of an evidence synthesizing project was discussed. Two themes were found in the critical appraisal of incorporating QSEN core competencies into undergraduate nursing curricula and decreasing the perioperative nursing shortage. Several limitations and gaps were found, such as lack of research evidence, no validated tools used, and small sample sizes. While it would be beneficial for the perioperative environment to be implemented into undergraduate nursing programs, there was a large variety of ways that was found in the evidence to accomplish this and no definite conclusion could be reached.

Project Summary

The purpose of this evidence synthesizing project was to determine the best way to incorporate perioperative practice into undergraduate nursing programs. There were two themes that were discovered in the critical appraisal process, increasing graduate nurse interest in the perioperative setting therefore decreasing the perioperative nursing shortage and incorporating QSEN core competencies in undergraduate nursing curricula by increasing nursing students' skills. Twelve articles were critically appraised, with seven of the twelve being program

evaluations. All of the articles had a lack of validated instruments and had small sample sizes. While, all the articles showed increased interest of graduate nurses in the perioperative setting or increased skills and it would be beneficial to incorporate the perioperative setting into the undergraduate nursing curriculum, there was a variety of ways that the authors implemented the perioperative setting into the undergraduate nursing curriculum. The recommendation for future research is to focus on the weaknesses found in the critical appraisal which were sample size and to ensure in future that generalizability is achieved. While the majority of the articles that were presented used guided methods, there were a variety of methods used to achieve the same effects, therefore, future research should focus on finding the best way to incorporate perioperative education into undergraduate nursing programs.

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Appendix A

Evidence Summary Matrix

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
1	Ball, Doyle, Oocumma, AORN Journal, 2015	Program Evaluation to create a perioperative education program for undergraduate nursing students to be prepared for the operating room	Four senior nursing students in a Mid-West Hospital and University	Positive Evaluation from Students and Preceptors Increased Student and knowledge and abilities Two out of four students hired into the perioperative setting	Sample Size	V	A
2	Bashaw AORN Journal (2016)	Program evaluation to develop a high-fidelity simulation into an undergraduate nursing program's perioperative elective course.	Nine students in a Midwest university	The students stated that they felt stressed and confused when the scenario first began to became an emergency, but stated that it was a positive experience. All of the students participated in the scenario and	Lack of outcome measures Students felt stressed due to new environment	V	B

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
				completed the required objectives of the simulation.			
3	Danko, C.L. AORN Journal (2019).	Quasi-experimental pre-posttest study after developing a perioperative course in an undergraduate nursing program.	44 junior level undergraduate nursing students	The pre-test was 65.6% and the mean of the post-test mean was 70.6%, which displays the course increased safety knowledge	Validity of Instrument Sample Size	II	B
4	Foran, P. Nurse Education in Practice (2016).	Non-experimental study	332 respondents that were senior nursing students who had completed perioperative education in their undergraduate nursing programs	Guided operating room experience had higher knowledge scores than any other experience. Elective model with 40 hours of guided experience versus no experience. Guided experience, theory practice, and extra practice had a higher score	Validity and reliability of questionnaire Sample size	III	B

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
				compared to non-guided, theory and no experience between test scores and the number of hours spent in OR plateauing at 40 – 60 hours. Guided operating room experience had a higher score on the knowledge test compared to all other models.			
5	Gregory, S., Bolling, D.R. and Langston, N.F. AORN Journal (2014).	Program Evaluation to develop a perioperative course in an undergraduate nursing program.	Total of 120 undergraduate nursing students	Positive remarks from students and have made three total courses. Students stated that course emphasized patient safety. 13 students have gone through all three courses. Three APRN and two work in surgical services	Lack of findings of students' careers after program	V	B

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
6	Messina, B.A.M., Ianniciello, J.M. and Escallier, L.A. AORN Journal (2011).	Program evaluation to develop an elective course to introduce undergraduate nursing students	7 undergraduate nursing students	In original course 2 out of 7 chose to go to the OR after graduation. 8 throughout the years have chosen to go to the OR.	Sample Size	V	A
7	Nash, Kamel, Nauer, Sherer, AORN Journal (2018)	Program Evaluation	8 Undergraduate Nursing Students in a Hospital and University in an Urban City in PA	Modules added credibility and value to the students' experiences. Skills that the students acquired were good listening, organization, time management, leadership skills, attentiveness, assertiveness, patience, and anticipate needs. Seven of eight would consider a career in the	Sample Size	V	B

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
				perioperative setting. Four said the OR is their first choice. One said the PACU is their first choice. Two said the Pre-op setting is the first choice. One of the eight was hired in the OR. Two were hired for a paid summer course in the same OR as class.			
8	Penprase, B., Monahan, J., Poly-Droulard, L. and Prechowski, S. AORN Journal (2016)	Program evaluation	8 undergraduate nursing students	14 out of 18 chose to work in the OR after graduation in first two cohorts.	Sample size	V	B

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
9	Schmidt, N.A. and Brown, J.M. AORN Journal (2019).	Non-experimental study	23 respondents to questionnaire out of 50. Individuals completed a perioperative elective course in junior or senior year of nursing school	26% (6) individuals work in the perioperative setting. Students perform certain skills better, especially when it dealt with sterile technique and talking to patients and families about surgical procedures.	Validity of Questionnaire and Sample size	III	B
10	Schmidt, N. A., Brown, J. M., & Holmes, L. Journal of International Nursing Education Scholarship (2016).	Qualitative study with a narrative inquiry	19 undergraduate nursing students that had completed a perioperative elective course	The four themes were perioperative career advantages and disadvantages, student perception paradox and became better nurses	Sample Size – while there was data saturation stated, there were no more individuals if needed	III	B
11	Tschirch, Dufrene, Leyden, Land (2017)	Program Evaluation	Undergraduate Nursing Students at a Texas University and Hospital	Student and Preceptors reported positive evaluations with a skill that students learned was teamwork.	Description of Sample	V	B

Article #	Author, Publication Source, & Date of Publication	Evidence Type and Purpose	Sample Type, Size, Setting	Study Findings	Limitations	Evidence Level	Quality Rating
	AORN Journal						
12	Wang, Shi, Bai, Zheng, Zhao (2015)	Mixed Method with Randomized Control Trial/ Qualitative	55 Nursing Students in a Chinese Hospital and University	Simulation-Based Education had a positive impact on students' perceptions. There was a higher interprofessional learning scale and increased knowledge of operating room nursing in the trial group.	Description of Simulation Programs	III	B

Appendix B

Evidence Summary Table

Category (Level Type)	Total Number of Sources/Level	Overall Quality Rating	Synthesis of Findings Evidence That Answers the EBP (PICO-T) Question
Level I • Experimental study • Randomized controlled trial (RCT) • Systematic review of RCTs with or without meta-analysis • Explanatory mixed method design that includes only a Level quantitative study			
Level II • Quasi-experimental studies • Systematic review of a combination of RCTs and quasi0experimental studies, or quasi-experimental studies only, with or without meta-analysis	1	B	Perioperative course for undergraduate nursing students, safety knowledge test given before and after course and displays the course increased safety knowledge of students.
Level III • Nonexperimental study • Systematic review of a combination of RCTs, quasi-experimental and non-experimental studies, or nonexperimental studies only, with or without meta-analysis • QuaLitative study or meta-synthesis • Exploratory, convergent, or multiphasic mixed-methods studies • Explanatory mixed method design that includes only a level III quaNtitative study	4	B	Qualitative Study found four themes which were perioperative career advantages and disadvantages, student perception paradox and became better nurses. Non-experimental studies found that individuals work in the perioperative setting or can perform certain skills better when dealing with sterile technique or talking to patients and families about surgical procedures that completed perioperative course. Increased knowledge of operating room nursing in simulation study. Non-experimental study found that having guided OR experience allows for higher knowledge test versus observation only or no OR

Category (Level Type)	Total Number of Sources/Level	Overall Quality Rating	Synthesis of Findings Evidence That Answers the EBP (PICO-T) Question
			experiences during undergraduate nursing
Level IV • Opinions of respected authorities and/or reports of nationally recognized expert committees or consensus panels based on scientific evidence			
Level V • Evidence obtained from literature or integrative reviews, quality improvement, program evaluation, financial evaluation, or case reports • Opinion of nationally recognized expert(s) based on experiential evidence	7	B	Three out of seven used the AORN Periop web-based modules. Every piece of evidence noted positive evaluations from students, faculty, and preceptors if used. List of skills acquired by students by self-report - Teamwork Good Listening, Organization, Time Management, Leadership Skills, patient safety Attentiveness, Assertiveness, Patience, and Anticipate Needs. Variety of length and type of course – 2 out of seven held in summer semester, 1 in "J" Semester, 4 held during fall or spring semester. 6 out of 7 used didactic and clinical experiences, 1 used only simulation. Of the articles that measured students choosing to work in the OR, one student or more has chosen to work in the OR or perioperative setting.