Marian University

Leighton School of Nursing

Doctor of Nursing Practice

Final Project Report for Students Graduating in May 2022

Improving Simulation Training: Rapid Sequence Induction with a Debriefing Component

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Abstract

Background: Simulation based training continues to be a growing element of healthcare education. Simulation training allows student registered nurse anesthetists (SRNAs) to practice critical skills in a low stress environment. Implementing simulation education with an evidence-based framework can improve educational outcomes. Simulation debriefing has been proven to be a key component of simulation education. The Promoting Excellence and Reflective Learning in Simulation (PEARLS) model can be used as a framework to implement a formal debriefing component to simulation training.

Purpose: The purpose of this project was to add the PEARLS debriefing model to the current rapid sequence induction (RSI) simulation at Marian University, and determine if this addition improved knowledge, confidence, and satisfaction of first year SRNAs.

Methods: This project utilized a quality improvement design. Quantitative data was collected using the 13-question National League for Nursing (NLN) Survey and a 5-question knowledge assessment. Data was analyzed using JASP (Jeffrey's Amazing Statistics Program) to determine if statistical significance occurred between the control and experimental group.

Implementation Plan/Procedure: The project took place at the Marian University Evans Center Simulation Laboratory. Twenty-four first year SRNAs were randomly divided into a control group, which received current simulation education, and an experimental group, which received current simulation education with the addition of the PEARLS debriefing model.

Implications/Conclusion: The implementation of the PEARLS debriefing model improved student confidence scores on the NLN Survey. Students who completed simulation training with a debriefing component rated higher self-confidence scores than students who did not receive a

debriefing component ($p = 0.005$). A formal debriefing component should be added to the rapid sequence induction simulation training at Marian University.

Keywords: Rapid sequence induction, simulation, simulation-based training, confidence, knowledge, satisfaction, debrief, debriefing component.

Improving Simulation Training: Rapid Sequence Induction with a Debriefing Component

This project was submitted to the faculty of Marian University Leighton School of Nursing as partial fulfillment of degree requirements for the Doctor of Nursing Practice, Nurse Anesthesia track. The Marian University Nurse Anesthesia Program currently offers a simulation training course to first year doctoral students in preparation for the transition into the clinical setting. This class includes hands-on simulation training with high-fidelity mannequins. The course aims to prepare student registered nurse anesthetists (SRNAs) for real clinical scenarios by providing education and practice on a variety of intricate clinical skills.

The vital skill of performing a rapid sequence induction (RSI) is currently taught in the simulation course. The current simulation education and training on an RSI is sufficient at Marian University but does not include a debriefing component. This project aims to improve the confidence, satisfaction, and knowledge of first year SRNAs by implementing an RSI simulation with the addition of the PEARLS debriefing model.

Background

It is imperative that SRNAs take information learned in didactic courses and apply it into the clinical setting. This transition often requires hands on practice through simulation training. Anesthesia programs and anesthesia educators continuously seek to improve students' skill level, confidence, and knowledge through simulation experiences. By knowing how to provide the best simulation education and the benefits of simulation training, anesthesia educators can appreciate and improve the transfer of learning (Botma, 2014).

An important skill first year SRNAs must learn and practice before entering the clinical setting is how to perform an RSI. This fundamental airway skill is used frequently by anesthesia providers. An RSI is an intubation technique that is indicated for patients who are at risk of

aspiration (Mollalign et al., 2019). For example, when emergently anesthetizing a patient for a surgery, and the patients' fasting status is unknown, performing an RSI is the safest method to protect and secure the airway. An RSI is a critical technique that involves securing the airway by doing so in a manner that lowers the risk of pulmonary aspiration (Mollalign et al., 2019). Being able to perform this skill diligently can lead to better patient outcomes. An RSI practiced with an inappropriate technique can lead to hypoxia, pulmonary aspiration, failure to intubate, and even patient death (Mollalign et al., 2019). It is critical that nurse anesthesia programs strive to better student's knowledge and confidence level prior to entering the clinical arena. Improved knowledge and confidence can lead to better human performance and higher quality patient care (Kalaniti & Campbell, 2015; Wiggins et al., 2018). With today's advancements in technology, mannequins can provide hands-on experience that can help prepare SRNAs for the clinical practice setting.

Simulation training has been shown to improve the confidence and knowledge of nursing students (Botma, 2014). According to Berragan (2014), simulation training was found to provide assurance and identity to students. In anesthesia residents, the use of simulation has been found to be a reliable method to assess student performance (Schwid et al., 2002). However, additional research is needed to evaluate the effectiveness of simulation training in anesthesia residents (Schwid et al., 2002). Advancements to RSI simulation training could offer better education and increase knowledge, satisfaction, and confidence of first year SRNAs at Marian University.

Problem Statement

Significant patient complications can occur from lack of appropriate training and knowledge on how to complete an RSI. First year SRNAs must be prepared to perform this technique proficiently when entering the clinical setting. The use of simulation training allows

students to practice hands on clinical scenarios within an environment of safety. However, additional research is needed to determine the best way to provide simulation training (Schwid et al., 2002). The Marian University Nurse Anesthetist Program currently lacks a formal debriefing component in its simulation training on an RSI. The question addressed by this project was: In first year SRNAs, how does the training of a rapid sequence induction simulation with a debriefing session, compared to current rapid sequence induction simulation training, affect the knowledge, confidence, and satisfaction of Marian University students?

Gap Analysis

Marian University's Nurse Anesthesia program currently lacks a formal debriefing component for the RSI stimulation. As the program and anesthesia educators seek to better the simulation experiences, the need for research on the best way to conduct simulation training is needed. The International Nursing Association for Clinical Simulation and Learning (INACSL) describes itself as a prestigious leader in the development of simulation training. Incorporating best practices, the INACSL offers an evidence-based, step-by-step framework to improve simulation education (INACSL, 2016). The INACSL Standards of Best Practice: Simulation Design includes providing students with a debriefing session after the simulation scenario is complete to enhance the simulation experience (INACSL, 2016). A formal debriefing session is what the Marian University Nurse Anesthesia program currently lacks in the RSI simulation. The goal of this project was to determine if the addition of a formal debriefing model to the current RSI simulation improved knowledge, confidence, and satisfaction scores among first year SRNAs at Marian University.

Review of Literature

Search Methodology

Databases used for collecting research included PubMed, MEDLINE: EBSCO, and Google Scholar. Search terms included: *simulation training, anesthesia simulation training, benefits of simulation in nursing, mannequin-based simulation, high-fidelity simulation, and rapid sequence induction simulation.*

Recent articles that included SRNAs and the effect of high-fidelity simulation training were scarce. Due to limited research findings on the use of high-fidelity simulation training for rapid sequence inductions among SRNAs, the use of simulation training among all levels of nursing education and skills were included in the literature review. Articles involving undergraduate nursing students, SRNAs, and certified registered nurse anesthetists (CRNAs) were included. Selected articles were published between the years 2014 and 2020, with two exceptions. The articles examined included levels of evidence I-VI and were based on the leveling system from Melnyk & Fineout-Overholt (2012). All articles obtained were presented by a reliable journal, peer-reviewed, and published in the English language. Articles were first screen by title and abstract. If these provided evidence for the simulation objectives, the full article was screened. Thirteen research articles were selected and synthesized (Appendix A). The following sections provide topics of importance that were found during the literature review.

Simulation

In 1969, Sim One was the first ever recorded use of a simulation mannequin to train anesthesia students (Lapkin et al., 2010). The use of simulation mannequins today can be described according to level of fidelity: low, medium, or high. Low fidelity mannequins are basic and less advanced. However, high-fidelity mannequins are life size and mimic a real patient by conveying vital signs, heart, and lung sounds. High-fidelity simulation mannequins respond the same way a patient would if given the same medications or subjected to the same external forces

such as incision. The high-fidelity patient simulation mannequin used at Marian University Nurse Anesthesia Simulation Laboratory is the Laerdal SimMan Universal Patient Simulator.

With today's advances in technology, high-fidelity simulation has become a part of healthcare education over the past decade (Kalaniti & Campbell, 2015). Simulation offers medical educators the opportunity to teach students' essential clinical skills in a safe environment (Kalaniti & Campbell, 2015). This new way of preparing healthcare students has initiated questions to the field of medical education. There is no better time to explore the benefits of simulation education and benefits for students (Kalaniti & Campbell, 2015).

Many authors have conducted research to determine the use of simulation-based training and its influence on nursing education. Thirteen peer reviewed research articles were used to determine the effectiveness of simulation training among nursing students. According to Hayden et al., the first and largest, longitudinal, randomized controlled trial was conducted in 2014 to determine if simulation training can be equally substituted for traditional clinical experience in undergraduate nursing programs across the United States. With a sample size of 666 nursing students, the researchers sought to determine the effects on knowledge, clinical competency, and transferability of learning from simulation training into the clinical setting. Researchers found that up to 50% of simulation training can successfully be replaced with traditional clinical experience in undergraduate nursing students (Hayden et al., 2014). The authors also found comparable passing rates of the National Council Licensure Examination between student groups who were simulation trained and ones who attended the tradition clinical settings (Hayden et al., 2014). This article showed that simulation-based training can be just as effective as traditional clinical experience (Hayden et al., 2014).

Among SRNAs, simulation has been proven to expand knowledge and enhance the performance of critical skills such as the use of transesophageal echocardiography and recognizing an intraoperative myocardial infarction (Erlinger et al., 2019; Shields & Gentry, 2020). In a study conducted on the use of transesophageal echocardiography, SRNAs who received simulation-based training in comparison to online training demonstrated improved performance in three cognitive categories of knowledge, transesophageal echocardiography windows, and cardiac pathology (Shields & Gentry, 2020).

A similar study conducted on SRNAs compared the use of high-fidelity simulation and virtual simulation to determine differences in recognizing changes in a patient's condition (Erlinger et al., 2019). This study showed that among second-year nurse anesthesia students, the use of high-fidelity simulation was superior to using virtual simulation. The second-year students were able to identify an intraoperative myocardial infarction faster when using high-fidelity simulation training (Erlinger et al., 2019). However, third-year nurse anesthesia students took the same amount of time to recognize changes in the patient's condition. This study showed that high-fidelity simulation training is more beneficial for second year SRNAs who have had little to no clinical experience and less didactic training (Erlinger et al., 2019).

Knowledge and Confidence

Two important simulation training outcome measures are levels of knowledge and confidence. High-fidelity simulation was used in a study to test nurses' knowledge and confidence on peripheral intravenous catheter insertion (Keleekai et al., 2016). The researchers presented the nurses with video education followed by virtual simulation then two simulation-based workshops. The study included a formative debrief after each training. This study showed

that the use of simulation significantly improved the nurses' knowledge and confidence for peripheral intravenous catheter insertion.

Hustad et al., 2019 showed that confidence levels improved using simulation-based training by allowing nursing students to take what was learned during two high-fidelity simulation scenarios and transfer it to clinical practice. For example, participants in the study described critical clinical skills were developed during simulation that are needed for clinical practice (Hustad et al., 2019) This study also exhibited that knowledge improved through enhancing clinical skills and judgement (Hustad et al., 2019).

Wiggins et al., 2018 used simulation-based training to determine the effect on knowledge, skills, and attitude towards regional anesthesia. The researchers created a blended simulation experience that included an online portion, checklists, and a simulation portion. The online portion included pre-course didactic content and consisted of seven modules, which took approximately four hours to complete (Wiggins et al., 2018). The checklist was developed based on a literature review of best practices and a modified Angoff method was used for minimum passing threshold (Wiggins et al., 2018). The simulation portion involved a realistic simulator which included the use of actual spinal and epidural kits used in the clinical setting (Wiggins et al., 2018). The use of this simulation educational approach improved knowledge, skill level, and confidence among CRNAs completing spinal and epidural blocks (Wiggins et al., 2018).

A systematic review and meta-analysis conducted by Hegland et al., 2017 concluded that the use of high-fidelity simulation-based training has benefits on clinical skills. However, no conclusion could be established on the effect of knowledge. The authors noted that more research needs to be completed due to the limited number of high-quality random control trials of decent size (Hegland et al., 2017).

Debriefing

One aspect of simulation training emphasized by many studies reviewed was the importance of debriefing (Doherty-Restrepo et al., 2018; Erlinger et al., 2019; Hayden et al., 2014; Hustad et al., 2019; Wiggins et al., 2018). Debriefing allows students to critically reflect on performance and use constructive criticism to improve the learning experience (Doherty-Restrepo et al., 2018). The INACLS also includes the debriefing process as a part of the best practices for simulation training (INACSL, 2016). In 2018, a study conducted by Doherty-Restrepo et al. concluded that the use of debriefing with either peers or faculty is an effective method to promote confidence and improve clinical skills in graduate students performing a knee injury assessment. Wiggins et al., reviewed 51 studies involving the use of high-fidelity simulation. They concluded educational feedback through debriefing was the most significant aspect of simulation-based training (Wiggins et al., 2018).

According to INACLS (2016), learning and reflection occur during the debriefing phase. For debriefing to be successful, five criteria must be met. First, the debriefing session must be led by a person knowledgeable in the debriefing process. Second, the setting where the debriefing takes place should be conductive to learning and support privacy and open communication. Third, the person leading the debriefing must offer attentiveness and concentration during the session. Fourth, the debriefing session must be based on a theoretical framework, which is formal. Fifth, the debriefing session must be aligned with objectives and outcomes of the simulation (INACLS, 2016).

Theoretical Framework

Promoting Excellence and Reflective Learning in Simulation (PEARLS)

The Promoting Excellence and Reflective Learning in Simulation (PEARLS) model is recommended by the INACS and offers an evidence-based approach to implement healthcare simulation debriefing (Bajaj et al., 2018). This debriefing tool was selected as a framework for this project. According to the debriefing tool developers, debriefing sessions should include "a safe learning environment, actively engage participants, and focus on learning and improvement" (Bajaj et al., 2018, para 1.). This framework integrates three common educational strategies. These are learner self-assessment, focused facilitation, and providing information or direct feedback. This formal debriefing tool provided the person leading the RSI simulation debriefing session with structure, goals, and integrated an evidence-based debriefing strategy. See Appendix B and C for a visual diagram of the framework.

Goal, Objectives, and Expected Outcomes

The goal of this project was to enhance the confidence, knowledge, and satisfaction of first year SRNAs at Marian University in the skill of performing an RSI by adding a debriefing component to current simulation training. The objectives included adding a debriefing component to current simulation training and measuring the knowledge, confidence, and satisfaction of performing an RSI simulation. This was done through a post-test to assess knowledge and a student self-evaluation survey to assess confidence and satisfaction. The National League of Nursing (NLN) student satisfaction and self-confidence survey was used. The expected outcome was that knowledge, confidence, and satisfaction scores would improve in students who receive the PEARLS formal debriefing session after the performed RSI simulation, compared to students who do not receive structured debriefing. To achieve goals and objectives of this project, the project design was implemented during April of 2021.

Project Design

The research project utilized an experimental design with a convenience sample of twenty-four SRNAs who were randomly assigned to two groups of twelve and twelve. One group received current simulation training used by Marian University's Nurse Anesthesia Program, which does not include formal debriefing. The other group received the same simulation training with the addition of the PEARLS debriefing framework after the simulation scenario was completed. Both groups were given the same checklist prior to the simulation which was provided by the course instructor and project evaluator, Dr. Bradley Stelflug. The evaluator was responsible for grading the checklist and provided focused facilitated feedback. The DNP project investigator, Kelsey Downham, implemented the PEARLS debriefing tool. Both groups were introduced into the simulation laboratory and provided the same scenario chosen by the evaluator. Knowledge was assessed in both groups after implementing the simulation training methods. The data was collected using a post-test. Confidence and satisfaction were assessed using a student self-evaluation survey. The quantitative data was collected in both groups after simulation training was complete.

Project Site

The research project was conducted at the Evans Center on Marian University's campus. The simulation training took place in the high-fidelity simulation laboratory which included all resources needed to complete the project. Resources included a high-fidelity mannequin and appropriate intubation supplies. Persons in the simulation experience included the first year SRNA, the project investigator, and the project evaluator. The project was open to all first year SRNAs who were enrolled in the Doctor of Nursing Practice program at Marian University.

Methods

Twenty-four students were randomly divided into two groups of twelve. A control group received the current simulation training included in Anesthesia Principles 1-*Simulation*. The experimental group received the same simulation training but with the addition of formal debriefing. Demographic information was collected prior to the simulation. This included age, gender, and number of years as a registered nurse.

Prior to the simulation, all students were given a reading assignment which included information on why and how to perform a rapid sequence induction. A checklist, made by the project evaluator, was provided to all students which contained required steps to pass the RSI simulation. All students were introduced into the simulation laboratory and provided appropriate supplies to complete the simulation. The students were provided with a brief patient report which included a healthy patient weighing 70 kilograms. After completion of the simulation, the control group participants then completed the post stimulation survey. The experimental group participants completed a formal debriefing session. The debriefing session included the project investigator, who led the PEARLS debriefing tool. The project evaluator implemented the focused facilitated portion of the PEARLS tool. This included discussing key aspects of the performance and reviewing the graded checklist with the student.

Both groups completed a five-question post-test to assess knowledge, along with a 13-question satisfaction and confidence survey. Requirements for passing Anesthesia Principles 1-*Simulation* remained the same for both groups. The course was pass/fail and the grading checklist was developed and graded by the project evaluator. The students in the control group were offered the opportunity to redo the simulation with the debriefing component.

Measurement Instrument

National League for Nursing (NLN) Survey

This 13-question tool examined student satisfaction and self-confidence in simulation learning (Appendix D). The series of questions assessed personal attitudes about education satisfaction with simulation learning and self-confidence. The survey included answers 1 through 5, with 1 being strongly disagree and 5 being strongly agree.

Knowledge Assessment

To assess knowledge, students answered five multiple choice questions regarding rapid sequence induction (Appendix E). These questions were created using the 6th edition textbook, Nurse Anesthesia by John J. Nagelhout, Sass Elisha, and Karen Plaus (2018). The questions were provided as a post-test after the simulation training. The questions were validated by anesthesia educators Dr. Bradley Stelflug, Dr. Sarah Franco, and Dr. Lee Summerland-Grady.

Data Collection and Analysis

Responses from the demographic survey, NLN survey and the RSI quiz were collected and analyzed. Data collection was completed by the project investigator. Demographic information was collected prior to the simulation experience. The remaining data was collected after the simulation training for the control group and after the debriefing component for the experimental group. Printed, paper surveys were utilized and placed into a folder after completion. Data collection remained anonymous and two separate folders were used for the experimental and control group.

Descriptive statistics were computed using JASP (Jeffery's Amazing Statistics Program). Demographic information was first analyzed and presented in a demographic table. An independent *t* test was then used to compare differences among the control and experimental group. A *t* test was chosen for assorted reasons. An independent *t* test can compare the means of two independent samples. Even with a small sample size, the *t* test can manage violations of the

assumed normal distribution. The *t* test presented the differences in mean knowledge, confidence, and satisfaction scores.

Results

Demographics

Twenty-four students participated in the RSI Simulation Project. Eight participants (33.3%) were male, and sixteen participants (66.7%) were female. Ages ranged from twenty-five to fifty-five years with a mean age of thirty-three. Eleven participants (46%) reported being a registered nurse for one to five years. Eight participants (33%) reported being a registered nurse for six to ten years. Five participants (21%) reported being a registered nurse for eleven years or more.

Demographics Table.

Demographics of 24 SRNA participants

Characteristics	N	%
Age Range	18	75.0
25-35	5	21.0
36-46	1	4.0
47-57		
Sex		
Female	16	66.7
Male	8	33.3
Years of Experience as a Registered Nurse		
1-5	11	46.0
6-11	8	33.0
12-17	4	17.0
18-23	1	4.0

Participant Satisfaction

Participant satisfaction-was tested by the NLN Student Satisfaction and Self-Confidence survey. An Independent-Samples *t* test was conducted to compare the mean satisfaction scores of

students who received debriefing to the mean scores of students who did not receive debriefing. In Table 1-A the t is the student t-statistic which indicates the difference between the sample mean and the number to the standard error of the mean. The t-value of 1.749 is relatively small, which results in a larger p-value. The df value correlates to the degree of freedom. The SE difference of 1.381 is the difference between the sample mean and the test value. The 95% CI for mean difference represents the lower and upper bound of the confidence interval for the mean. In Table 1-B the N value represents the number of valid observations used for the *t* test. The presented mean is the mean of the variable. The SD is the standard deviation of the variable. The SE is the standard error mean that estimates the standard deviation of the sample mean. No significant difference was found ($t(22) = 1.749$, $p > .05$). A significant difference would have been noted with a result of $p < .05$. The mean of the students who received debriefing ($M = 23.167$, $sd = 2.552$) was not significantly different from the mean of the students who did not receive debriefing ($M = 20.750$, $sd = 4.048$). Data analysis for participant satisfaction is shown in table 1-A and table 1-B.

Table 1-A.

Independent Samples T-Test

						95% CI for Mean Difference	
	t	df	p	Mean Difference	SE Difference	Lower	Upper
Score	1.749	22	0.094	2.417	1.381	-0.448	5.282

Table 1-B.

Results of Satisfaction Scores

	Group	N	Mean	SD	SE
Score	Debriefing	12	23.167	2.552	0.737
	No Debriefing	12	20.750	4.048	1.169

Participant Self-Confidence

Participant self-confidence was tested by the NLN Student Satisfaction and Self-Confidence survey. An Independent-Samples *t* test was conducted to compare the mean self-confidence scores of students who received debriefing to the mean scores of students who did not receive debriefing. In Table 2-A the t is the student t-statistic which indicates the difference between the sample mean and the number to the standard error of the mean. The t-value of 3.160 is relatively large, which results in a smaller p-value. The df value correlates to the degree of freedom. The SE difference of 1.477 is the difference between the sample mean and the test value. The 95% CI for mean difference represents the lower and upper bound of the confidence interval for the mean. In Table 2-B the N value represents the number of valid observations used for the *t* test. The presented mean is the mean of the variable. The SD is the standard deviation of the variable. The SE is the standard error mean that estimates the standard deviation of the sample mean. Statistical significance was found between the means of the two groups ($t(22) = 3.160$, $p < .05$). A significant difference was noted with a result of $p < .05$. The mean of the students who received debriefing ($M = 38.083$, $sd = 4.231$) was significantly different from the mean of the students who did not receive debriefing ($M = 33.417$, $sd = 2.875$). This showed that the implementation of the debriefing component resulted in higher self-confidence scores. Data analysis for participant self-confidence is demonstrated in table 2-A and table 2-B.

Table 2-A.

Independent Samples T-Test

						95% CI for Mean Difference	
	t	df	p	Mean Difference	SE Difference	Lower	Upper
Score	3.160	22	0.005	4.667	1.477	-1.604	7.729

Table 2-B.

Results of Self-Confidence Scores

	Group	N	Mean	SD	SE
Score	Debriefing	12	38.083	4.231	1.221
	No Debriefing	12	33.417	2.875	0.830

Participant Knowledge

Participant knowledge was tested by a posttest knowledge assessment. Percentage values were calculated for each question and compared between groups. Two of the five questions resulted in a twenty-five percent improvement between groups. One question resulted in an eight percent improvement. Two questions resulted in no change and were correct 100% between the two groups.

An Independent-Samples *t* test was conducted to compare the mean knowledge scores of students who received debriefing to the mean scores of students who did not receive debriefing. In Table 3-B the t is the student t-statistic which indicates the difference between the sample mean and the number to the standard error of the mean. The t-value of 0.713 is relatively small, which results in a larger p-value. The df value correlates to the degree of freedom. The SE difference of 1.965 is the difference between the sample mean and the test value. The 95% CI for mean difference represents the lower and upper bound of the confidence interval for the mean. In Table 3-C the N value represents the number of valid observations used for the *t* test. The mean presented is the mean of the variable. The SD is the standard deviation of the variable. The SE is the standard error mean that estimates the standard deviation of the sample mean. No significant difference was found ($t(8) = 0.713$, $p > .05$). A significant difference would have been noted with a result of $p < .05$. The mean knowledge score of the students who received debriefing ($M =$

10.400, *sd* = 2.302) was not significantly different from the mean of the students who did not receive debriefing (*M* = 9.00, *sd* = 3.742). Data analysis is found in tables 3-A, 3-B, and 3-C.

Table 3-A.

Comparison of Knowledge Assessment Scores

Test Questions	Without Debriefing Results	With Debriefing Results	Percent Difference
All the following are reasons to perform a rapid sequence induction except: a. Trauma patient (Distractor) b. Morbidly obese patient (Correct Answer) c. Patient with history of delayed gastric emptying and reports uncontrolled GERD during pre-op (Distractor) d. Pregnant women 22 weeks' gestation (Distractor)	Correct=6 Incorrect=6 50% Correct	Correct=9 Incorrect=3 75% Correct	25% improvement
What factor provides the highest overall successful rate of airway management and greatest possibility for rapidly securing the airway? a. Use of propofol 2mg/kg (Distractor) b. Use of a stylet in the ETT (Distractor) c. Use of muscle relaxation (Correct Answer) d. Use of a Glidescope (Distractor)	Correct=4 Incorrect=8 33% Correct	Correct=7 Incorrect=5 58% Correct	25% improvement
What has been described as the "gold standard" means of preventing aspiration of gastric contents during the RSI? a. Use of Succinylcholine 1.5mg/kg (Distractor) b. Providing positive pressure ventilation before administration of muscle relaxant (Distractor) c. Cricoid pressure (Correct Answer) d. Use of a laryngeal mask airway (Distractor)	Correct=12 Incorrect=0 100% Correct	Correct=12 Incorrect=0 100% Correct	No change

When should cricoid pressure be released during the RSI? a. After ETT placement has been confirmed (Correct Answer) b. After administration of muscle relaxation (Distractor) c. As soon as the patient loses the eyelid reflex (Distractor) d. Whenever the nurse believes it is appropriate (Distractor)	Correct=12 Incorrect=0 100% Correct	Correct=12 Incorrect=0 100% Correct	No change
One of the greatest differences between routine induction and RSI is? a. The use of high dose Propofol (Distractor) b. The administration of a Proton Pump Inhibitor in pre-op c. The use of muscle relaxation before knowing if you can mask ventilate the patient (Correct Answer) d. Pushing induction medications quickly (Distractor)	Correct=11 Incorrect=1 92% Correct	Correct=12 Incorrect=0 100% Correct	8% improvement

Table 3-B.

Independent Samples T-Test

	t	df	p	Mean Difference	SE Difference
Scores	0.713	8	0.496	1.400	1.965

Table 3-C.

Results of Knowledge Scores

	Group	N	Mean	SD	SE
Score	Debriefing	5	10.400	2.302	1.030
	No Debriefing	5	9.000	3.742	1.673

Limitations, Recommendations, Implications for Change

There were notable limitations of this project. First, the sample population from the Marian University Nurse Anesthesia program consisted of twenty-four first year students. This limitation could have been improved by a large sample size. Second, the high-fidelity mannequin was not fully functional during the time the project was implemented. The students were unable

to accurately assess end tidal carbon dioxide and oxygen level after endotracheal tube placement. Therefore, this project could be repeated and potentially show more meaningful results with a fully functioning high fidelity simulator.

Implications for Practice

Data analysis of the RSI simulation project showed a statically significant increase in student confidence scores. This indicated that the students who received simulation debriefing rated higher self-confidence scores on the NLN survey. Improved self-confidence by simulation debriefing has also been supported by recent research (Hustad et al., 2019; Keleekai et al., 2016; Wiggins et al., 2018). To improve student self-confidence, a formal debriefing component should be added to simulation education at Marian University.

The mean score of both knowledge and satisfaction were higher in the students who received simulation debriefing. However, neither knowledge nor satisfaction scores showed statistical significance. This indicates that further research is needed to determine if knowledge and satisfaction are impacted by a debriefing component. The satisfaction scores that did not show statistical significance could be because students are satisfied with simulation training regardless of debriefing. The knowledge and satisfaction of students at Marian University will not be improved with the addition of a formal debriefing component to stimulation education.

Conclusion

Satisfaction

No significant difference was found between satisfaction scores using the NLN Nursing Satisfaction and Self-Confidence in Learning instrument. The mean of the students who received debriefing was slightly higher. However, they were not significantly different from the mean of

the students who did not receive debriefing. This data shows that debriefing after the RSI simulation does not significantly improve student satisfaction.

Self-Confidence

Using the NLN Nursing Satisfaction and Self-Confidence in Learning instrument, self-confidence scores showed statistical significance. The mean of the students who received debriefing was notably higher than the mean of the students who did not receive debriefing. This data supports the use of simulation debriefing to improve self-confidence in first year nurse anesthetist students.

Knowledge

Data analysis showed a twenty-five percent improvement of two test questions in the experimental group. Two questions had no change between the two groups and one question showed an eight percent increase in the experimental group. Even though statistically insignificant, these results indicate that knowledge scores did improve in students who received debriefing after the RSI simulation. An explanation for the two questions that remained unchanged between the groups is that the content was adequately covered in didactic. Therefore, simulation experience did not have an impact on the score of the two questions.

Like various research studies, the RSI Simulation Project found simulation debriefing to be a key factor in simulation education. Most significantly, the use of the PEARLS debriefing tool improved student self-confidence scores when performing a rapid sequence induction using a high-fidelity mannequin.

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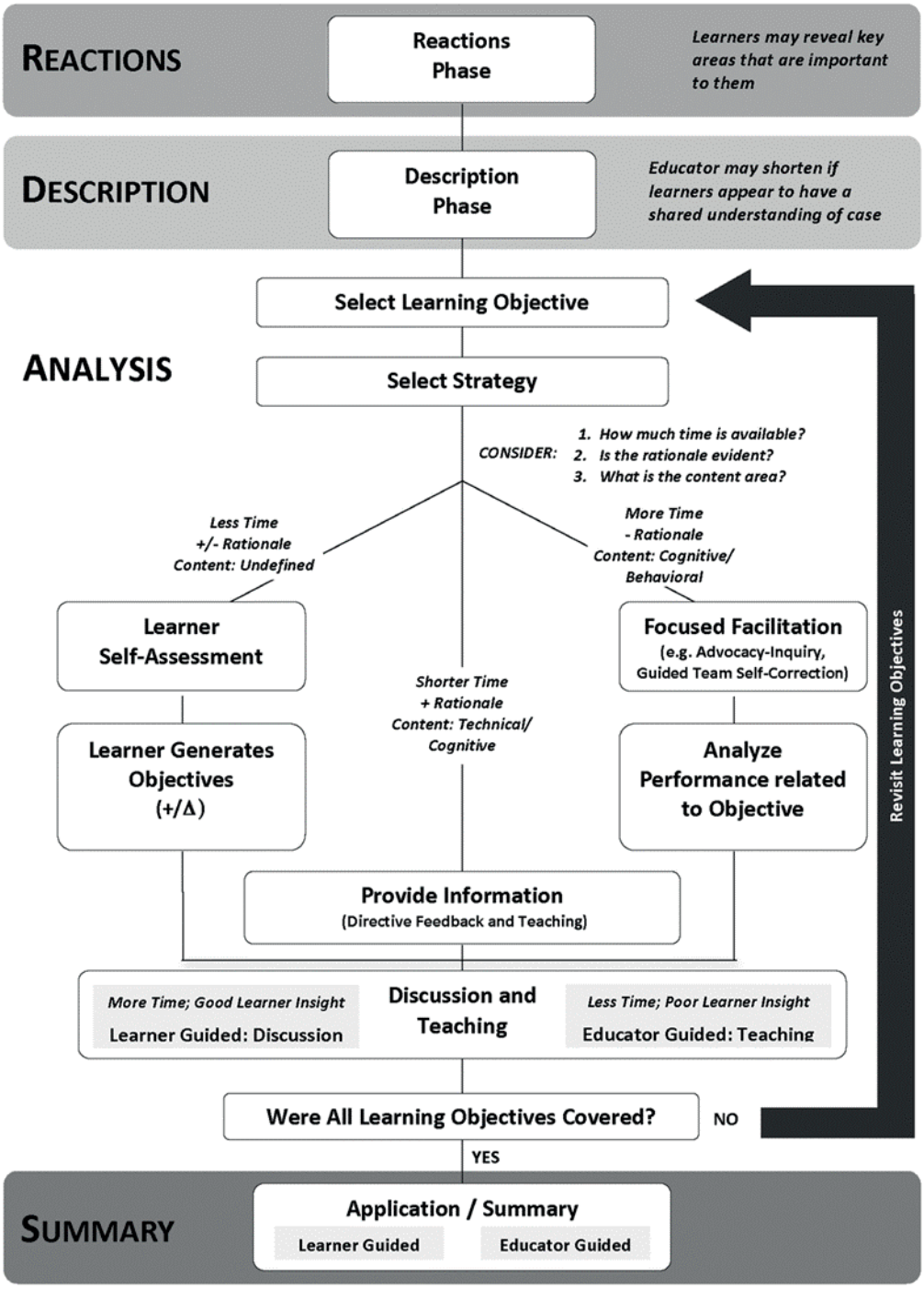
Appendix A

Literature Review Matrix					
Reference in APA format	**Level of Evidence**	**Variables**	**Sample**	**Instruments**	**Results**
Berragan, L. (2014). Learning nursing through simulation: A case study approach towards an expansive model of learning. Nurse Education Today, 34, 1143-1148.	Level III-qualitative descriptive study	The impact of simulatio	The participants were full time first year undergraduate students (n = 9) undertaking the RN BSc (Hons) Adult Nursing programme, nurse educators (n = 3) who facilitated simulation sessions and registered nurse mentors (n = 4) who supported students in practice.	A small-scale narrative case study. Semi-structured interviews by telephone and via e-mail. The interviews were tape recorded and transcribed verbatim. Video recordings of student simulation experiences.	Data analysis through progressive focusing revealed that the nurse educators viewed simulation as a means of helping students to learn to be nurses, whilst, the nurse mentors suggested that simulation helped them to determine nursing potential. The students' narratives showed that they approached simulation learning in different ways resulting in a range of outcomes: those who were successfully becoming nurses, those who were struggling or working hard to become nurses and those who were not becoming nurses.
Botma, Y. (2014). Nursing student's perceptions on how immersive simulation promotes theory-practice integration. International Journal of Africa Nursing Sciences, 1, 1-5.	Level III-qualitative descriptive study	Use of simulation with high-fidelity maniquens and standard simulation to assess theory-practice integration, confidence, deliberate practice, motivation, and teamwork in third and fourth year nursing students	Convenient sampling. n=33	Standard evaluation form, audio tapes	Simulation promotes theory–practice integration, builds confidence, makes students aware of the aspects of care that need to be improved through deliberate practice, increases the motivation to learn and transfer their knowledge, and strengthens communication among team members. Knowledge on the benefits of simulation can guide nurse educators to harness the method to enhance transfer of learning.
Doherty-Restrepo, J., Odai, M., Harris, M., Yam, T., Potteiger, K., & Montalvo, A. (2018). Students' perception of peer and faculty debriefing facilitators following simulation-based education. Journal of allied health, 47(2), 107–112.	Level III	dependent variables: 1) students' self-reported confidence in performing an orthopedic assessment of the knee on a simulated patient, and 2) students' assessment of the effectiveness of the debriefing	Convenient sampling. n=33	Debriefing Assessment for Simulation in Healthcare. SPSS version 17.0. n=23	Simulation-based education is recognized as an effective method to promote confidence and improve clinical skills in students by providing constructive feedback through debriefing.
Erlinger, L. R., Bartlett, A., & Perez, A. (2019). High-fidelity mannequin simulation versus virtual simulation for recognition of critical events by student registered nurse anesthetists. AANA journal, 87(2), 105–109.	Level III	A total sample of 39 students agreed to participate and were randomly assigned into 2 groups. One group participated in a virtual simulation first, followed by a high-fidelity mannequin simulation. The other group participated in a highfidelity mannequin simulation first, followed by a virtual simulation.	n=39	Nonparametric tests were performed for the data analysis. Mann-Whitney U statistical tests were performed and Wilcoxon rank sum test.	The findings from this study indicate that among secondyear SRNAs, the use of high-fidelity mannequin simulation led to quicker recognition of intraoperative MI. However, among third-year SRNAs in our study, there was no difference between both simulation methods in the time it took to recognize an intraoperative MI.
Hayden, J.K., Smiley, R.A., Alexander, M., Kardong-Edgren, S., & Jeffries, P.R. (2014). The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. Journal of Nursing Regulation, 5, supplement, s4-s64	Level II-National study, longitudinal, randomized, controlled trial	Use of simulation to determine if simulation was an appropriate substitute for clinical experience. Control group: Traditional clinical experience with no more than 10% simulation. 25% group replaced by sim. 50% group replaced by simulation.	n=10 (Schools of Nursing): 5 ADN, 5 BSN, geographically diverse, community colleges and large universities. 3 groups used, sample of 200 students per group. 847 students consented to study. 666 completed the study.	Creighton Competency Evaluation Instrument, Clinical Learning Environment Comparison Survery, Critical Thinking Diagnostic, Ner Graduate Nurse Performance Survery, knowledge assessed by ATI RN Comprehensive Predictor 2010, Global Assessment of Clinical Competency and Readiness for Practice, National Council Licensure Examination.	Up to 50% simulation can be effectively substituted for traditional clinical experience in nursing students. High-quality simulation must be provided with best practices. Simulation can euqally prepare students for the NCLEX and allow for adequate knowledge and clinical competence when compared to traditional clinical.
Hegland, P. A., Aarlie, H., Strømme, H., & Jamtvedt, G. (2017). Simulation-based training for nurses: Systematic review and meta-analysis. Nurse education today, 54, 6–20. https://doi.org/10.1016/j.nedt.2017.04.004	Level I-Systematic review and meta-analysis	The aim of this systematic review is to evaluate effect of simulation-based training on registered nurses' skills and knowledge.	58 articles were selected after screening for full-text review. 15 RCTs were used. Inclusion criteria were RCT evaluating the effect of simulation-based raining for graduate nurses or graduated nurses in continuing education.	Two authors screened all titles and abstracts independently. Data was retrieved by one person and quality checked by the other.	Findings show simulation training appears to be an effective strategy to improve nurses' skills, but further good-quality RCTs with adequate sample sizes are needed.

Hustad, J., Johannesen, B., Fossum, M., & Hovland, O. J. (2019). Nursing students' transfer of learning outcomes from simulation-based training to clinical practice: a focus-group study. BMC nursing, 18, 53. https://doi.org/10.1186/s12912-019-0376-5	Level III-Qualitative descriptive design	A qualitative descriptive design with focus group interviews was adopted	n=32 (second or third year nursing students)	focus group interviews. The demographic data were analysed using descriptive statistics	The results showed that simulation-based training promoted self-confidence as well as improved clinical skills and judgement, and the participants discovered the importance of communication and team collaboration in a clinical context.
Keleekai, N. L., Schuster, C. A., Murray, C. L., King, M. A., Stahl, B. R., Labrozzi, L. J., Gallucci, S., LeClair, M. W., & Glover, K. R. (2016). Improving nurses' peripheral intravenous catheter insertion knowledge, confidence, and skills using a simulation-based blended learning program: A randomized trial. simulation in healthcare : *journal of the Society for Simulation in Healthcare*, 11(6), 376–384. https://doi.org/10.1097/SIH.0000000000000186	Level I- RCT	n=59. The study was a randomized, wait-list control group with crossover using nurses on three medical/surgical units. Baseline PIVC knowledge, confidence, and skills assessments were completed for both groups. The intervention group then received a 2-hour PIVC online course, followed by an 8-hour live training course using a synergistic mix of three simulation tools. Both groups were then reassessed. After crossover, the wait-list group received the same intervention and both	n=63 (group A n=30, group B n=33)	Demographic data form, peripheral intravenous catheter insertion knowledge assessment,	The current randomized control trial was conducted to evaluate the impact of a simulation-based blended learning program on nurses' PIVC insertion knowledge, confidence, and skills. Results demonstrate significant improvements in nurses' knowledge, confidence, and skills with the use of a simulation-based blended learning program for PIVC insertion. Transferability of these findings from a simulated environment into clinical practice should be further explored.
Lapkin, S., Fernandez, R., Levett-Jones, T., & Bellchambers, H. (2010). The effectiveness of using human patient simulation manikins in the teaching of clinical reasoning skills to undergraduate nursing students: a systematic review. JBI library of systematic reviews, 8(16), 661–694. https://doi.org/10.11124/01938924-201008160-00001	Level I-Systematic Review of all randomized and quasi-randomized controlled trials	Included undergraduate nursing students and the use of high-fidelity simulation mannequins. The study measured critical thinking, clinical skill performance, knowledge, confidence, and student satisfaction with simulation experience.	21 publications were used for review and 8 were included in the review.	Systematic review of research articles	The use of human patient simulation mannequins improves three outcomes integral to clinical reasoning: knowledge, critical thinking, and the ability to identify deteriorating patients. Students reported high levels of learner satisfaction.
Mollalign, M., Gebreegzi, A. H., Getinet, H., & Adem, S. (2019). Audit on current practice of rapid sequence induction and intubation of anesthesia in the university of gondar hospital, northwest Ethiopia. Anesthesiology Research and Practice. https://doi.org/10.1155/2019/6842092	Level II-Obersvational Study	All elective and emergency adult or pediatric patients with a risk of pulmonary aspiration who were operated under general anesthesia with rapid sequence induction and intubation during the audit period.	A total of 35 patients were operated during the study period. Of these, 31 (88.57%) patients were adults and 4 (11.43%) patients were pediatrics. Most of the patients were emergency (29 (82.857%)), and the rest were elective (6 (17.142%).	Data were collected by using a standard checklist. &e checklist was primarily prepared in English language. After completion of data collection, the data were entered in Microsoft Excel for analysis. Guidelines used as reference for this clinical audit were World Federation of Societies of Anesthesiologists, Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine, British Journal of Anesthesia, National Institute of Health, and World Journal of Emergency Medicine	Most anesthetists were good at preparing all available monitoring and drugs, making sure that IV line is well-functioning, preparing suction with a suction machine, preoxygenation, application of cricoid pressure, and checking the position of the ETT after intubation was performed. Preparing difficult airway equipment during planning of rapid sequence induction and intubation, giving roles and told to proceed their assigned role for the team, attempt to ventilate with a small tidal volume, and routine use of bougie or stylet to increase the chance of success of intubation needed improvement.
Schwid, H. A., Rooke, G. A., Carline, J., Steadman, R. H., Murray, W. B., Olympio, M., Tarver, S., Steckner, K., Wetstone, S., & Anesthesia Simulator Research Consortium. (2002). Evaluation of anesthesia residents using mannequin-based simulation: a multiinstitutional study. Anesthesiology, 97(6), 1434–1444. https://doi.org/10.1097/00000542-200212000-00015	Level II	Anesthesiology departments at 10 institutions with METI (Medical Education Technologies Inc., Sarasota, FL) or MedSim (MedSim Inc., formerly of Ft. Lauderdale, FL) mannequin-based simulators participated in this study.	n=99	The simulation scenarios and grading forms used in this study were developed and used in a prior study involving over 30 simulator sessions. 3The scenarios and grading forms were circulated to the 32 anesthesiologists who contributed to this study for comments and suggestions. The simulation sessions were videotaped using two camera angles to capture the subject's clinical management and the anesthesia machine and monitors.	Evaluation of anesthesia residents using mannequin-based simulators shows promise, adding a new dimension to current assessment methods. Further improvements are necessary in the simulation scenarios and grading criteria before mannequin-based simulation is used for accreditation purposes. Even advanced anesthesia residents nearing completion of their training made numerous management errors; however, construct-related validity of mannequin-based simulator assessment was supported by an overall improvement in simulator scores

Shields, J. A., & Gentry, R. (2020). Effect of simulation training on cognitive performance using transesophageal echocardiography. American Association of Nurse Anesthetist. 88(1), 59-65. https://www.aana.com/docs/default-source/aana-journal-web-documents-1/effect-of-simulation-training-on-cognitive-performance-using-transesophageal-echocardiography-february-2020.pdf?sfvrsn=af8dd107_6	Level III	Dependent Variable: Measure on pretests/posttest exam scores Groups: Quasi-Independent Variables: students who receive web-based education over 1 week and studetns who received in person simulation for 2 hrs	n=71 (SRNAs)	Video based (ExamSoft) assessment tool	One group underwent web-based simulation training and one group underwent in person simulation training. Both groups showed improvement, but the SRNAs who underwent simluation training in person scored higher on posttest evaluations.
Shin, S., Park, J. H., & Kim, J. H. (2015). Effectiveness of patient simulation in nursing education: meta-analysis. Nurse education today, 35(1), 176–182. https://doi.org/10.1016/j.nedt.2014.09.009	Level I-Meta analysis	The effects of patient simulation in nursing education in various learning environments and the use of different evaluation techniques.	n=20 artciles	meta-analysis	Simulation-based learning did increase scores on knowledge and skill examinations. Results give evidence for the effectiveness of simulation education, which provides students with authentic clinical situations and allows them to practice nursing skills in safe environments.
Wiggins, L. L., Morrison, S., Lutz, C., & O'Donnell, J. (2018). Using evidence-based best practices of simulation, checklists, deliberate practices, and debriefing to develop and improve a regional anesthesia training course. *American Association of Nurse Anesthetist. 86*(2), 119-126. https://www.aana.com/docs/default-source/aana-journal-web-documents-1/using-evidence-based-best-practices-of-simulation-checklists-deliberate-practice-and-debriefing-to-develop-and-improve-a-regional-anesthesia-training-course-april-2018.pdf?sfvrsn=c2505fb1_8	Level IIII	Measurement: Dependent Variable (Precourse/Postcourse comfort and confidence levels). Group: Quasi-Independent Variables (4 hour online course and Hands on practice).	n=49 (CRNAs)	Precourse demographic survey and atttitude survey, skills assessment/ checklist, postcourse survey	The confidence and comfort level for epidural and spinal blocks were higher when compared to results from prior to simulation training.

Appendix B



"PEARLS Debriefing Framework," by Eppich & Cheng, 2015, *Journal of the Society for Simulation in Healthcare*, *10*(2), 106–115(https://doi.org/10.1097/SIH.0000000000000072). Copyright 2015 by Wolters Kluwer Health, Inc. Reprinted with permission.

Appendix C

Setting the scene (may also occur before the first scenario debriefing, may abbreviate or omit for subsequent debriefings):

"I'll spend about XX minutes debriefing the case with you. First, I'll be interested to hear how you are feeling now that that case is over; second, I'd like someone to describe what the case was about to make sure we are all on the same page. Then, we'll explore the aspects of the case that worked well for you and those you would manage differently and why. I'll be keen to hear what was going through your mind at various points in time. We'll end by summarizing some take-home points and how to apply them in your clinical practice."

Reaction

- "How are you feeling?"

Potential follow-up question:

- "Other reactions?" or "How are the rest of you feeling?"

Description

- "Can someone summarize the case from a medical point of view so that we are all on the same page?"; "From your perspective, what were the main issues you had to deal with?"

Potential follow up questions:

- "What happened next?"; "What things did you do for the patient?"

Analysis

Signal the transition to the analysis of the case and frame the discussion:

- "Now that we are clear about what happened, let's talk more about that case. I think there were aspects you managed effectively and others that seemed more challenging. I would like to explore each of these with you."

Learner self-assessment (eg, plus-delta)	*Directive feedback and teaching*	*Focused facilitation*
"What aspects of the case do you think you managed well and why?"	Provide the relevant knowledge or tips to perform the action correctly.	*(eg, alternatives—pros and cons; self-guided team correction; advocacy-inquiry)*
"What aspects of the case would you want to change and why?"	• "I noticed you *{behavior}*. Next time, you may want to … *{suggested behavior}*… because *{provide rationale}*."	• Specifically state what you would like to talk about ("I would like to spend a few minutes talking about XXX.")
Close performance gaps selectively using directive feedback and teaching or focused facilitation		*Elicit underlying rationale for actions: see SDC 2, http://links.lww.com/SIH/A175 for advocacy-inquiry approach*

Are there any outstanding issues before we start to close?

Application/summary

- *Learner guided:* "I like to close the debriefing by having each you state one two take-aways that will help you in the future."
- *Educator guided:* "In summary, the key learning points from this case were …"

"PEARLS Debriefing Script," by Eppich & Cheng, 2015, *Journal of the Society for Simulation in Healthcare*, *10*(2), 106–115(https://doi.org/10.1097/SIH.0000000000000072). Copyright 2015 by Wolters Kluwer Health, Inc. Reprinted with permission.

Appendix D

Student Satisfaction and Self-Confidence in Learning

Instructions: This questionnaire is a series of statements about your personal attitudes about the instruction you receive during your simulation activity. Each item represents a statement about your attitude toward your satisfaction with learning and self-confidence in obtaining the instruction you need. There are no right or wrong answers. You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking the numbers that best describe your attitude or beliefs. Please be truthful and describe your attitude as it really is, not what you would like for it to be. This is anonymous with the results being compiled as a group, not individually.

Mark:
1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

Satisfaction with Current Learning	SD	D	UN	A	SA
1. The teaching methods used in this simulation were helpful and effective.	○ 1	○ 2	○ 3	○ 4	○ 5
2. The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	○ 1	○ 2	○ 3	○ 4	○ 5
3. I enjoyed how my instructor taught the simulation.	○ 1	○ 2	○ 3	○ 4	○ 5
4. The teaching materials used in this simulation were motivating and helped me to learn.	○ 1	○ 2	○ 3	○ 4	○ 5
5. The way my instructor(s) taught the simulation was suitable to the way I learn.	○ 1	○ 2	○ 3	○ 4	○ 5
Self-confidence in Learning	**SD**	**D**	**UN**	**A**	**SA**
6. I am confident that I am mastering the content of the simulation activity that my instructors presented to me.	○ 1	○ 2	○ 3	○ 4	○ 5
7. I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum.	○ 1	○ 2	○ 3	○ 4	○ 5
8. I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	○ 1	○ 2	○ 3	○ 4	○ 5
9. My instructors used helpful resources to teach the simulation.	○ 1	○ 2	○ 3	○ 4	○ 5
10. It is my responsibility as the student to learn what I need to know from this simulation activity.	○ 1	○ 2	○ 3	○ 4	○ 5
11. I know how to get help when I do not understand the concepts covered in the simulation.	○ 1	○ 2	○ 3	○ 4	○ 5
12. I know how to use simulation activities to learn critical aspects of these skills.	○ 1	○ 2	○ 3	○ 4	○ 5
13. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time..	○ 1	○ 2	○ 3	○ 4	○ 5

 Revised December 22, 2004

"Student Satisfaction and Self-Confidence in Learning Questionnaire," by National League for Nursing, 2004 (http://www.nln.org/docs/default-source/default-document-library/instrument-2_satisfaction-and-self-confidence-in-learning.pdf?sfvrsn=0). Copyright 2005 by National League for Nursing Inc. Reprinted with permission.

Appendix E

RSI Posttest Knowledge Assessment

1. All of the following are reasons to perform a rapid sequence induction except:
   a. Trauma patient
   b. Morbidly obese patient
   c. Patient with history of delayed gastric emptying and reports uncontrolled GERD during pre-op
   d. Pregnant woman 22 weeks gestation

2. What factor provides the highest overall successful rate of airway management and greatest possibility for rapidly securing the airway?
   a. Use of propofol 2mg/kg
   b. Use of a stylet in the ETT
   c. Use of muscle relaxation
   d. Use of a Glidescope

3. What has been described as the "gold standard" means of preventing aspiration of gastric contents during the RSI?
   a. Use of Succinylcholine 1.5mg/kg
   b. Providing positive pressure ventilation before administration of muscle relaxant
   c. Cricoid pressure
   d. Use of a laryngeal mask airway

4. When should cricoid pressure be released during the RSI?
   a. After ETT placement has been confirmed
   b. After administration of muscle relaxation
   c. As soon as the patient loses the eyelid reflex
   d. Whenever the nurse believes it is appropriate

5. One of the greatest differences between routine induction and RSI is?
   a. The use of high dose Propofol
   b. The administration of a Proton Pump Inhibitor in pre-op
   c. The use of muscle relaxation before knowing if you can mask ventilate the patient
   d. Pushing induction medications quickly

Nagelhout, J. J., & Elisha, S. (2018). *Nurse anesthesia* (6th ed.). Elsevier.

Appendix F

Activity	January 2021	April 2021	May 2021	June 2021	November 2021	December 2021	January 2022
IRB Submission	X						
Implementation and Data Collection		X					
Data Analysis			X				
Description of Findings			X				
Rough Draft for Final Project				X			
Final Draft and Dissemination					X		