



***NorthShore University HealthSystem
School of Nurse Anesthesia
&
DePaul University School of Nursing
Class of 2020
DNP Poster Presentations***

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Background: Patients who require anesthesia may have a history of using medical cannabis (MC). Illinois has had a MC program since 2013 and legalized recreational use on January 1, 2020. Certified Registered Nurse Anesthetists (CRNA) and Student Registered Nurse Anesthetists (SRNAs) in Illinois need to be adept at discussing MC with their patients and understand how this class of medication affects anesthesia. Multi-modal approaches to control pain are becoming the standard of care inside and outside of the operating room. It may be that MC will be found useful in narcotic-sparing approaches to anesthesia

Objectives: Knowledge, beliefs and attitudes of CRNAs and SRNAs should be assessed so that an educational approach that meets their needs can be devised.

Method: A survey was adapted from a previous study and disseminated via email to members of the Illinois Association of Nurse Anesthetists (IANA). Data from survey was collected using [Qualtrics](#) and was evaluated using Statistical Package for the Social Sciences (SPSS) version 25.0.

Results: The survey found that CRNAs and SRNAs in Illinois are generally positive about the efficacy of MC for certain conditions, but desire more information to be available from proper research. They generally did not feel comfortable about their knowledge, though did feel that understanding MC was important. Most found information regarding MC from the news media and medical journals and nearly all felt that MC should be included in CME. Few were able to say they felt comfortable talking about MC with patients or had suggested MC as a treatment option. Many reported that patients had inquired into MC as a treatment option and felt that it was essential to be able to talk with patient about MC. Anesthetists generally feel that MC can be beneficial for certain conditions when used as prescribed though they are unlikely to recommend it and are uncomfortable talking about it.

Discussion: CRNAs and SRNAs in Illinois are not currently required to administer or prescribe MC in their practice setting. As MC use grows more prevalent, anesthetists will be called to administer anesthesia to patients who use cannabis either for recreation or as a therapy. The legalization of recreational cannabis allows more patients to be comfortable reporting use. Anesthetists will be responsible for adjusting anesthesia plans as they would for a patient using tobacco, alcohol or any prescription medications.

Implications for Nursing: Failure to adjust anesthetic based on current recommendations could be seen as negligence and actionable. Research is lacking, but studies indicate that chronic and acute uses of cannabis can effect a patients' reaction to anesthesia. MC can be a useful treatment option for certain conditions and anesthetists should be as comfortable discussing it with patients as they would blood pressure or diabetes medication.

Conclusions: Education about MC should be included in CRNA education and continuing medical education (CME).

Background: Lumbar CSF drains are temporary drains placed into the lumbar subarachnoid space and externally divert CSF to maintain perfusion pressures in a target range and protect against cerebral or spinal ischemia.

Objective: To evaluate if the introduction of a reference tool which served as a guideline for basic drain maintenance and manipulation improved the anesthesia provider's knowledge.

Method:

- Pre-test/post-test design with educational reference tool
- The content of the pre-test, post-test, & the educational reference tool were reviewed for content validity by a panel of 5 anesthesia experts.
- Convenience Sample: Members of private Facebook group "CRNAs and SRNAs"

Results:

- 40 Anesthesia Providers
 - 2 were excluded (n=38) for not completing post-test
 - 65.8% were CRNAs (n=25)
 - 34.2% were SRNAs (n= 13)
- The difference in pre-test and post-test results was overall statistically significant (p-value <0.001)
- Neither years of practice nor specialization exhibited an impact on performance
- The majority of study participants reported never managing a lumbar CSF (n=19) or managing less than 5 yearly (n=16).
- Questions 3-6 statistically significant (p-value <0.05)
- Questions 3, 5, 6, & 7 lowest scoring pre-test mean values but greatest improvement in post-test mean values

Discussion: This study demonstrated CSF drain management to be an infrequent task with significant knowledge gaps amongst practicing CRNAs and SRNAs. The developed reference tool revealed overall improvement in knowledge in CRNAs and SRNAs regarding lumbar CSF drain management.

Implications for Nursing: This reference tool provides a quick resource for the pertinent elements of drain manipulation which facilitates education of SRNAs and CRNAs in areas of knowledge deficit

Conclusions: A reference tool for basic lumbar CSF drain manipulation can improve CRNAs and SRNAs knowledge when the goal is to provide optimal patient care, regardless of specialty or years of experience.

Background: Men have been underrepresented in the nursing profession in modern history. As the demand for nursing care increases globally, it is imperative that any gender barriers historically preventing men from pursuing nursing careers are acknowledged and mitigated to ensure a robust and equitable nursing workforce in the future. To date, no research has been conducted on the gender barriers faced by men in nurse anesthesia.

Objectives: The aim of this study was to survey male student registered nurse anesthetists (SRNAs) and Certified Registered Nurse Anesthetists (CRNAs) regarding past experiences with gender barriers in their educational and professional careers.

Method: This is a descriptive, quantitative study using a survey methodology. Student and certified nurse anesthetists who are members of the Illinois Association of Nurse Anesthetists (IANA) were recruited via email and voluntarily completed the web-based Inventory of Male Friendliness in Nursing Programs (IMFNP) 23-item survey. Data were analyzed using descriptive statistics.

Results: The surveyed respondents reported representation and communication differences between men and women as the main gender-related barriers to their learning in nursing school. Obtaining adequate clinical experiences in obstetrical nursing was also a barrier to the learning of respondents. Most of the respondents were white with an average age of 47.83 years. 62.8% of the respondents were over 40 years old.

Discussion: Survey respondents experienced limited gender barriers in their nursing education. The barriers they did face related more to representation of men in nursing and different communication styles between men and women. While the sample of survey respondents skewed older, men under 40 experienced fewer gender barriers than those over 40 years old. This could be attributed to a broader acceptance of men in traditionally female professions or a softening of gender role paradigms among younger generations.

Implications for Nursing:

Understanding historical and modern barriers to men entering nursing and the lived experiences of male SRNAs and CRNAs will help develop new policies and practices that support men as they pursue careers in nursing and nurse anesthesia.

Conclusions:

Male SRNAs and CRNAs in the US state of Illinois experience gender barriers during their nursing education. The men surveyed identified lack of male representation in nursing, few opportunities to form mentorship relationships with male RNs/faculty and communication differences between men and women as contributing factors to perceived gender barriers. Greater attention to the needs of male nursing students could help men transition to the nursing role more easily and improve the representation of men in the field overall.

No funding obtained for this research.

No COI to disclose

Background: Phrases with negative connotations in the assessment of pain can lead to adverse patient perceptions in regard to their surgical experience. Consequently, this can lead to an increase in the amount of analgesic interventions requested & administered. Traditional pain scales, such as the Verbal Numeric Pain Scale (VNRS) from 0-10, can “prime” patients to perceive pain and discomfort. The VNRS Comfort Scale asks about a patient’s comfort or discomfort, bypassing the negative language “pain” altogether. Conventional healthcare training emphasizes the VNRS pain scale, while excluding almost entirely the VNRS Comfort Scale. There is a need for education regarding the VNRS Comfort Scale, as it has a significant positive impact on the perioperative course of many patients.

Objective: *Does a video-based educational tool regarding the use of the comfort scale improve Nurse Anesthesia Trainee (NAT) understanding & knowledge of comfort scales in the perioperative setting?*

Method:

- Pre-test/post-test design comparing NATs’ knowledge regarding comfort scales before and after watching a video-based educational tool
- A convenience sample from NSUHS NATs was used

Results:

- o Total of 56 NATs participated in this study
- o Majority were women (n=38, 67.9%), and 32.14% were male participants (n=18)
 - o Essentially equivalent participation from all NAT years
 - o A wide variety of ICU experience, with the majority of participants falling under “3-4 years”
 - o Ethnicities of participants included White, Asian/Pacific Islander, & Hispanic
- o The majority of participants were aged between 26-30 years old
- o The mean score for the pre-test was 65% (n= 56)
- o The mean score for the post-test was 88% (n=56).
- o On average, the post-test scores were 23.03 % higher than the pre-test scores (95% CI, [18.61, 27.46])
- o The paired t-test showed a statistically significant difference in the post-test mean scores ($p = <0.01$.; [-.27456, -.18615] 95% CI)
- o Cohen’s d calculated value was 1.45

Discussion/Implications for

Nursing:

- The most recent literature widely accepts and endorses the positive outcomes associated with the VNRS comfort scale
- Studies have found that participants in groups utilizing a comfort scale report less pain and more comfort compared to participants in groups utilizing a pain scale
- The comfort scale not only has a positive impact on a patients’ experiences, but can also decrease the amount of narcotics administered within the perioperative period
- By incorporating the comfort scale into CRNA practice, nurse anesthetists can continue to provide the patient-centered, holistic care that they always have.

Conclusions:

- CRNAs provide >49 million anesthetics each year → important for this group to be utilizing the most up-to-date assessment tools
- Underutilization of the comfort scale is widespread d/t lack of education and emphasis on pain-focused assessment (ie, pain if the 5th vital sign)
- Our video-based educational tool had a positive impact on NAT knowledge of the Comfort Scale, with the 100% stating that they would be willing to incorporate into practice

Background:

Sugammadex was FDA approved in December 2015
New option for neuromuscular blockade reversal

- Vs. Neostigmine/Glycopyrrolate used for years successfully
- Novel pharmacological agent

NAT experience

- Diverse clinical settings
- Working with different anesthesia providers everyday
- Wide variations in Sugammadex use are evident based on personal observation

Objectives:

Study aim:

- Describe CRNAs use of Sugammadex in clinical practice

3 research questions:

- 1) Among CRNAs, why do they choose to administer Sugammadex over the standard drug, Neostigmine?
- 2) Among CRNAs, how do they choose to dose Sugammadex?
- 3) Among CRNAs, what are the variations in Sugammadex practice patterns?

Method:

Online survey utilizing Qualtrics research platform

- 4 quantitative questions
 - Demographic information
- 6 qualitative questions
 - Open ended, type in text box format

Validity of the survey was ensured by approval from 5 content experts on the topic

Four quantitative questions analyzed via SPSS

- Categorical in nature
- Descriptive statistics using frequencies and percentages summarized demographic information of the participants

Qualitative questions analyzed via NVivo

- Identification of recurring themes through text search and word frequency
- Coded for within NVivo, words and phrases with high frequency presented as major themes

Search Term	Frequency
Private clinic/office	1.0
Anesthesia surgery center	5.2
Community hospital	53.5
Academic/University hospital	58.4

Results:

Quantitative Results:

- N = 209 quantitative results
- Practice setting: majority within community and academic hospital
- Years of practice: relatively even distribution
- Practice model: majority in medically directed or medically supervised with MDA on site
- Community setting: relatively even distribution

Participant characteristic	% (N=209)
Practice Setting	
Private clinic/office	1.0
Anesthesia surgery center	5.2
Community hospital	53.5
Academic/University hospital	58.4
Years of Practice	
0-5 years	22.9
6-10 years	20.7
11-20 years	21.1
21-30 years	17.8
30+ years	7.3
Practice Model	
Medically directed	59.7
Medically supervised with anesthesiologist on site	47.9
Medically supervised without anesthesiologist on site	9.1
Unsure	1.2
Community	
Rural	27.2
Suburban	38
Urban	34.7

Qualitative Results:

Theme 1: Why CRNAs choose to use or avoid Sugammadex

- Renal pathology (n = 47)
- Cardiac pathology (n = 36)
- Female on Oral Contraceptives (n = 46)
- Age (n = 47)
- Depth of blockade/Dosing of paralytics (n = 285)
- Respiratory pathology (n = 92)
- Size of patient (n = 155)
- Increased confidence (n = 160)

Theme 2: How CRNAs dose Sugammadex

- Depth of blockade/dosing of paralytics (n = 285)
- Size of patient (n = 155)
- Safety profile (n = 66)

Theme 3: Practice variations existing within the clinical setting

- Cost consideration (n = 140)
- Cost savings (n = 10)
- Institution policy (n = 88)

Variable	Frequency
Private clinic/office	1
Anesthesia surgery center	5
Community hospital	53
Academic/University hospital	58

Discussion:

- There are many factors that influence a CRNAs decision to use Sugammadex
- Almost unanimously, CRNAs feel more confident using Sugammadex and would choose to reverse their patients with it if possible
- This has led to changes in practice where Sugammadex has become the standard of care for reversal in institutions where it is available
- Largely, use of the drug is restricted based on cost and availability
- CRNAs preference for use of Sugammadex only plays a minor role in the actual use of the drug during anesthesia care delivery
- Further research should be aimed at implementing institution wide policies for use of Sugammadex

Implications for Nursing:

- Further research should be aimed at implementing institution wide policies for use of Sugammadex
- Development of scoring system to determine relative risk for postoperative respiratory weakness could standardize use in institutions where Sugammadex is not readily available

Conclusions:

- CRNAs preference for use of Sugammadex only plays a minor role in the actual use of the drug during anesthesia care delivery

Acknowledgements:

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Background: SRNAs are high risk for increased stress, burnout and serious psychological sequelae during their training.

- Self-efficacy allows SRNAs to overcome barriers and setbacks to achieve their goals.
- SRNAs may cope in many different ways, both positive and negative.
- Health and wellness education has been presented as a means to prevent burnout, depression, substance use disorder, attrition and suicide.
- Specific components of health and wellness education are lacking evidence.
- Deficiencies in the research regarding the method of delivery, or modality.
- Ideal timing of the education implementation is not established in literature.

Objectives: Evaluate effects of content, modalities and timing of health and wellness education on the self-efficacy and coping mechanisms of students in a nurse anesthesia training program.

Method: Survey responses from 159 participants were collected online. Participants identified their General Self-Efficacy Score (GSE), Brief Coping Problem Orientation to Experience (COPE) score, average daily stress, health and wellness education components and the timing and modalities in which they were delivered, and if they assessed their education as adequate.

Results: Largest demographic groups were 26-30 years old, female, had 3-5 years nursing experience, and were in the first 18 months of a doctorate program.

- Receiving health and wellness education before beginning a nurse anesthesia training program increased the number of components delivered, as well as active coping with problem solving, while passive coping with avoidance decreased.
- As daily stress increased, GSE scores were lower, use of passive coping with social support and avoidance increased, and education was reported more often as inadequate.



Discussion: A majority of students did not receive health and wellness education before they began their nurse anesthesia training program. Receiving health and wellness education before beginning a nurse anesthesia training program increased the number of health and wellness components that students received overall.

Implications for Nursing: More health and wellness education topics should be included in curriculum, as increased quantity demonstrated improved active coping behaviors. Repeated health and wellness education throughout training is recommended at least 2-3 times. Purposely timed education is recommended in first six months of programs, with a focus on problem solving, and less on social support. Nurse anesthesia training programs can utilize both the Brief COPE and GSE tools for assessments of students throughout training

Conclusions: This study established opportunity for the development of more frequent and focused health and wellness education from nurse anesthesia training programs and monitoring of student self-efficacy and coping mechanisms.

Background:

Numerous studies demonstrate that occupational stress among student registered nurse anesthetists (SRNAs) is a significant health problem. The high demands of a full-time program has the potential to lead to feelings of low self-worth, depression, and the inability to cope in an intense, fast-paced clinical practice setting.³ When asked about potential interventions that could be implemented, students expressed interest in meditation.¹ Guided meditation can be a useful tool that can be integrated into daily life to help decrease stress and improve well-being among these individuals.

Objectives:

The aim of this DNP project is to examine the relationship between mindfulness meditation intervention and self-reported stress, depression, wellness, and self-efficacy among second year SRNAs.

Method:

The study was designed to measure the impact of six, five-minute guided meditations on the self-reported stress levels of SRNAs over a 13-week period. Each guided meditation intervention took place 10 minutes prior to an already scheduled lecture at NorthShore University Evanston Hospital campus classroom.. The participants were second year SRNAs attending NorthShore University School of Nurse Anesthesia. The pre- and post-survey assessed self-reported stress using the Perceived Stress Scale (PSS). The pre-survey utilized a traditional paper and pencil test format and the post-test used an online questionnaire via survey monkey.

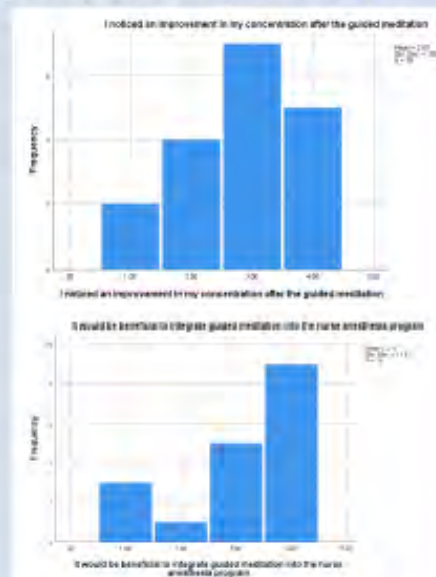
Results:

Stress levels were measured using a 10 question, 5-point Likert Scale survey. The final sample size on the post-survey was 18, equating to a 85.7% return rate (n=18) out of 21 pre-survey respondents.

Questions 2,4,5 and 8 in both the pre- and post-surveys showed statistical significance. Questions 3, 6, 9 and 10 revealed no statistical significance for both the and post-survey.

Question 1 and 7 found that the pre-survey showed no statistical significance while the post-survey exhibited statistical significance. Students showed a slight increase in stress, post-survey was completed during the first weeks of the global pandemic which could have contributed to this finding.

There was a 6.9% increase in those that felt as though they were better able to control irritations in their life, signifying an improvement in self-efficacy



Discussion:

The results of this study showed a slight increase in stress. The post-survey was completed during the first weeks of the global pandemic which could have contributed to this finding. Alternatively, compared to the pre-survey, there was a 6.9% increase in those that felt as though they were better able to control irritations in their life, signifying an improvement in self-efficacy.

The sample was asked to provide feedback regarding incorporating guided meditation within their anesthesia program and within their clinical practice. The survey found that over half of the participants would find it beneficial to utilize guided meditation in their future clinical practice along with incorporating guided meditation into future nurse anesthesia programs.

Conclusions:

Studies have demonstrated that SRNAs must cope with stress during their anesthesia program which may negatively affect well-being. It was found that 47.3% of SRNAs acknowledged being depressed at some point while in school, and of this 47.3%, 21.2% had suicidal ideations.¹ This is a population that requires attention.¹ Although benefit from our intervention was not appreciable, our research has shown that there is an interest in integrating stress reduction techniques, such as guided meditation to promote a healthy learning environment among SRNAs.

Item Bank Development and Testing of the Perioperative Non-Opioid Modalities

(PNOM) Questionnaire: A Pilot Study

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DEPAUL UNIVERSITY



Background:

An estimated 11% of adults experience daily pain and millions of Americans are treated with opioids for chronic pain. Finding ways to improve the clinical practice of pain management can assure safer, more effective pain treatment while reducing the risks that come with opioid use. There are validated tools available to identify surgical patients at risk of persistent opioid use, as well as protocols to decrease perioperative opioid use. However, there are no validated tools to assess the barriers and facilitators to CRNAs' use of non-opioid modalities for the treatment of perioperative pain.

Objectives:

The purpose of this project was to develop the item bank for a questionnaire entitled the Perioperative Non-Opioid Modalities (PNOM) questionnaire. The PNOM was designed to measure the barriers, moderators, and facilitators surrounding the nurse anesthetists' use non-opioid modalities for the treatment of perioperative pain. The ultimate goal is to establish the validity and reliability of a post-piloted PNOM questionnaire in a large sample of CRNAs in a future study.

Theoretical framework: The main theory that forms the basis for this project is Bandura's Social Cognitive Theory. The Social Cognitive Theory suggests that human behavior is driven by multiple factors. These include knowledge, one's perceived self-efficacy, expected outcomes, goals and methods of achieving these outcomes, and perceived barriers and facilitators to achieving goals (Bandura, 2004).

Method: This study utilized a pilot, instrument development design to develop a questionnaire with items using a 7-point Likert type questionnaire. Forty-two CRNAs completed the Perioperative Non-Opioid Modalities (PNOM) questionnaire. Twenty-two of these CRNAs completed the PNOM for a second time to determine test/retest validity. The data collected was used to finalize a validated survey.

Reliability statistics				
Overall scale Cronbach's alpha		No. of total items		
0.736		39		
Item-total statistics				
Individual items	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
I believe that the effects of opioids are predictable	113.69	218.113	.336	.725

Results: Survey respondents included CRNAs with at least one year of current clinical exposure in setting of nurse anesthetist. Survey results were analyzed using SPSS software and individual items were examined for their validity and reliability. Questions deemed unreliable were excluded from the final instrument.

Discussion: Findings demonstrated that the PNOM questionnaire has been shown to have preliminary reliability and validity as a tool to assess these barriers and facilitators.

By developing a questionnaire that identifies the barriers and facilitators to the administering of perioperative non-opioid modalities by CRNAs, the investigators have created a tool that may be used to facilitate practice change in the way perioperative non-opioid modalities are utilized by CRNAs.

Implications for Nursing: A future study is needed to distribute the PNOM questionnaire to a larger group of subjects in order to establish further validity and reliability. Through the use of the PNOM, healthcare change agents and anesthesia administrators will be able to identify barriers and facilitators to the administration of non-opioid modalities by CRNAs. This will in turn allow them to create more focused policies and protocols aimed at increasing the use of perioperative non-opioid modalities and reducing the use of perioperative opioids.

Conclusion: The PNOM provides a greater understanding of facilitators, barriers, and moderators surrounding CRNAs' use of non-opioid modalities. These findings have important implications for practice and health care policy moving forward.

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Background:

Anesthesia providers may lack confidence in using a fiberoptic (FO) scope since it is rarely used in the clinical setting, which provides an opportunity for re-training via simulation.

Objectives:

The purpose of this study was to describe the usefulness of a video-recorded low-fidelity FO intubation simulation and its effect on anesthesia providers' confidence and skill in performing FO intubation.

Method:

The study was conducted during the 2019 IANA Airway Workshop using a post-test only study design, and participants who volunteered in the simulation were asked to watch a video-recorded instruction on FO intubation. After viewing the video, the participants completed a hands-on simulation while the researchers recorded their FO intubation times, and the participants were allowed up to three recorded attempts.

Results:

Fifty-eight participants completed the hands-on simulation and the post-simulation questionnaires. Results showed an improvement in skill as evidenced by faster mean FO intubation times for each of the three attempts (27.34 sec, 24.99 sec, and 16.13 sec), but was not statistically significant. The FO simulation was found to be effective as demonstrated by participants rating the simulation as both useful.

Simulation Usability Mean Scores for Each Item				
Item	Minimum	Maximum	Mean	SD
The simulation was well organized and easy to follow.	1	4	3.74	0.783
Objectives and procedures of the simulation were clearly communicated.	1	4	3.72	0.790
The simulation covered critical content necessary for performing successful FO intubation.	1	4	3.72	0.790
The simulation was an effective resource for improving my performance of FO intubation.	1	4	3.76	0.779
Participating in the simulation made it easier for me to perform a FO intubation.	1	4	3.74	0.785
Overall Usability Score: Mean = 3.73; SD = 0.77; Range = 3 Cronbach's Alpha = 0.98				

Critical Action Survey Mean Scores for Confidence in Each Item				
Item	Minimum	Maximum	Mean	SD
More confident in recognizing the appropriate anatomical landmarks when performing a FO intubation.	1	4	3.62	0.813
More confident in my ability to perform a successful FO intubation.	1	4	3.55	0.820
More efficient performing the steps involved in a successful FO intubation.	1	4	3.55	0.820
More confident in recognizing situations where FO intubation is appropriate.	1	4	3.60	0.815
More confident in my ability to operate the FO bronchoscope.	1	4	3.59	0.838
Overall Confidence Score: (M = 3.58; SD = 0.81; Range = 3) Cronbach's Alpha = 0.99				

Discussion:

One-way ANOVA tests were used to compare the mean scores based on demographic data with three or more groups. Only one of the ANOVA test results demonstrated statistical significance. The lack of statistical significance in other areas may have occurred due to the relatively small sample size (n=20). However, differences in mean overall scores based on demographic data could still be appreciated.

Implications for Nursing:

Simulation provides opportunity for nurse anesthesia providers to build or retain confidence and skill in FO intubation.

Conclusions:

The simulation enhanced anesthesia providers' skill and confidence in FO intubation and was found useful by the participants.



Background & Significance:

- The practice of pimping involves a series of challenging and often intentionally unanswerable questions posed by a preceptor.
- Educational tactic potentially damaging to the learning process and development of student registered nurse anesthetists (SRNAs).
- The concern surrounding the idea of pimping involves the desire to protect quality education and optimize the learning experiences of SRNAs.

Objectives:

- This study examined the knowledge, beliefs, attitudes, and practices of Certified Registered Nurse Anesthetist (CRNA) clinical instructors regarding the educational technique of pimping for SRNA education.

Methodology:

- Implemented a descriptive, cross-sectional survey via Qualtrics for its participants.
- The study sample included Illinois CRNA clinical instructors of SRNAs who are members of the Illinois Association of Nurse Anesthetists (IANA), by way of the IANA electronic database.

Results:

- A total of **n=112** CRNA clinical instructors completed the survey, which included sociodemographic and pimping questionnaires adapted to fit the context of SRNA education.
- Remarkably, (n=85, 78.0%) participants do not utilize pimping as an educational technique in their practice, while (n=24, 22.0%) participants choose to enact this educational tactic.
- Notably, (n=64, 61.5%) participants believe pimping does not help the student understand and apply the material better, which is essential for development of critical thinking and translation of knowledge to practice.
- Free responses described CRNA instructors aims with use of pimping:
 1. Expose the unprepared
 2. Assess their knowledge level
 3. Create a memorable moment for the student by means of embarrassment to build motivation to be better
 4. Assert dominance to “take them down a notch”
 5. Maintain safety of the patient
- Free responses detailed downsides and negative associations with pimping:
 1. "Brings up old memories – painful for the student. I'd never do it to anyone..."
 2. Threatening questioning
 3. "...defeats the purpose of learning"
 4. "Creates an environment of fear"
 5. "...makes them feel inadequate and incapable."

Discussion:

- Numerous CRNAs who enact pimping share a common end-goal in harboring an environment of patient safety, SRNA preparedness, and effective care, but how some instructors do so may be damaging to the learning process and student.
- A common sentiment circulated among the responses detailing the negatives of pimping and includes obstruction of the learning environment, compromising patient safety, and belittling.
- There do seem to be many purposes and applications of this technique. However, CRNA clinical instructors need to be aware of their actions in the learning process and reflect upon their relationship with the SRNA.

Implications for Nursing Practice:

- Clear and open-communication between the SRNA and clinical instructor should take place to establish goals for learning and build rapport.
- The opportunity for formal education of CRNA instructors may be necessary to optimize instruction of SRNAs.

Conclusion:

- It is understood there is the potential for student mistreatment, which brings into question the morality of the educational technique itself.
- A closer look into strategies that can strengthen the position of clinical instructors as a support system for SRNAs is needed.

Background:

- Malignant Hyperthermia (MH) is a life threatening condition where survival is highly dependent on early recognition and prompt treatment (Seifert, Wahr, Pace, Cochrane & Bagnola, 2014)
- Frequency - 3,000: 50,000 procedures (Hirshey Dirksen, Van Wicklin, Mashman, Neiderer & Merritt, 2013)
- Since there is reduced awareness of this critical condition due to its infrequent nature, a method that creates the most realistic scenario for anesthesia providers is a simulation based exercise (Hirshey Dirksen et al., 2013)
- Simulations provide - controlled setting, enhanced competency, kinesthetic learning (Hirshey Dirksen et al., 2013)

Objectives:

- The purpose of this DNP project was to examine the impact of a high-fidelity, simulated malignant hyperthermia crisis and its impact on CRNA confidence in crisis management.
- Research Questions
- Does a high-fidelity simulation training exercise improve CRNAs' confidence in identifying signs and symptoms during a MH crisis?
- Does a simulation-based training exercise improve CRNAs' confidence in the management of a MH crisis?
- Does a simulation-based training exercise improve CRNAs' confidence in teamwork dynamics, including establishing and delegating roles during a MH crisis?
- Does a simulation-based training exercise improve CRNAs' confidence in their ability to prioritize interventions during a MH crisis?

Method:

Study Design:

- A multi-group pretest-posttest design utilizing survey methodology evaluated the effectiveness of a high fidelity in vivo simulation regarding the management of malignant hyperthermia.
- The goal was focused on improving confidence among the Advocate Christ Medical Center (ACMC) CRNAs
- This experimental design was the method utilized because of its ability to demonstrate the correlation between the simulation and its effect on CRNA confidence (Polit & Beck, 2017)

Sample and Setting:

- The sample consisted of a homogenized group of staff CRNAs at ACMC. A total of nine CRNAs participated in the study
- The setting took place at ACMC in the facility's operating room and allowed the primary investigators to conduct a simulation in a controlled environment with ACMC simulation staff members
- A total of three CRNAs participated in each simulation exercise
- The simulation was repeated until all CRNAs who wished to participate had the opportunity to do so, which ended up totaling nine CRNAs

Instruments:

- The pre and post surveys were identical and included twelve questions composed by the primary investigators to evaluate the CRNAs' confidence in performing tasks involved in the management of MH
- Each question required a response utilizing a 6-point Likert scale
- The response options were numbered from one (strongly disagree) to six (strongly agree)
- The pre survey also included 5 demographic questions requiring numerical responses

Results:

Pre and Post Survey Results by Survey Question

Category	Survey Question	Pre Survey Average	Post Survey Average
Signs and Symptoms	1. I am confident in my ability to identify the signs and symptoms of malignant hyperthermia.	4.56	5.22
	2. I am confident in my ability to differentiate Malignant Hyperthermia from other adverse intraoperative events.	4.44	5.11
	3. I am confident in my ability to manage a malignant hyperthermia crisis.	3.89	5.22
	4. I am confident in my ability to reconstitute dantrolene correctly.	3.44	5.67
Management	5. I am confident in my ability to reconstitute dantrolene efficiently.	3.22	5.67
	6. I am confident in my ability to allocate necessary resources (ie MH Cart, MHAUS Hotline, MH Code Shield) in a MH crisis.	4.11	5.44
	7. I am confident in my ability to locate the MH cart.	3.56	5.33
	8. I am confident in my ability to locate items within the MH cart.	3	5.11
	9. I am confident in my ability to interpret lab findings related to MH.	3.78	5.44
Delegation	10. I am confident in my ability to delegate roles during a malignant hyperthermia crisis.	4	5.89
	11. I am confident in my ability to establish team-oriented communication.	4.56	5.89
	12. I am confident in my ability to prioritize interventions necessary to treat malignant hyperthermia.	4.22	5.67
Prioritizing			

Overall Pre and Post Survey Results

	Pre Survey Average	Post Survey Average	Difference	Mean Standard Deviation	Significance
Overall	3.89	5.47	1.57	0.63	<.000

Pre and Post Survey Results by Category

Category	Pre Survey Average	Post Survey Average	Difference	Mean Standard Deviation	Significance
Signs and Symptoms	4.5	5.16	0.66	0.125	<.029
Management	3.57	5.43	1.84	0.6	<.000
Teamwork Dynamics	4.28	5.89	1.61	0.14	<.000
Prioritization	4.22	5.67	1.44	.04	<.000

Discussion:

- The purpose of this DNP project was to examine the impact of an in vivo high-fidelity malignant hyperthermia simulation and its impact on CRNA confidence in crisis management.
- Our key findings show improvements in overall confidence scores by all participants in all objectives. Participants specifically scored the highest increase in confidence in the management of MH (1.84 points) after a simulation, followed by teamwork dynamics (1.61 points), and prioritization (1.44 points). The smallest change in confidence was in the area of identifying signs and symptoms which only increased by .66 points from pre to post survey.

Implications for Nursing:

- Future research focused on the impact of high fidelity simulation on crisis management among CRNAs should be expanded in order to provide more data.
- While MH is an unlikely event, it would be beneficial for providers to regularly attend simulation-based training sessions to improve provider confidence.
- There is a need for a larger, multi-facility study in order to provide additional substantiation on the efficacy of high-fidelity simulation on MH crisis management.
- The advent of Ryanodex, a newer formulation of dantrolene that can be rapidly reconstituted in less than 10 seconds, with five milliliters of sterile water, containing 250 milligrams per vial, could be used to treat MH instead of the older formulation of dantrolene (Ryanodex, n.d.). A study investigating the use of this new formulation and its impact on CRNA confidence in the management, delegation, and prioritization of interventions of MH would be of interest.

Conclusions:

- Malignant hyperthermia is an anesthesia emergency. However, confidence in the management of MH among CRNAs may be lacking due to its rarity in the clinical environment.
- This pilot study demonstrated in vivo simulation provides CRNAs an opportunity to rehearse the recognition of signs and symptoms, management, delegation and prioritization of lifesaving interventions required in an MH crisis.
- MH crisis simulation may ultimately lead to a more effective response if and when an MH crisis is encountered in clinical practice.

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Background:

- Concerns about students' overreliance on medical reference (MR) apps.
- May lead to poor retention of important information .
- Deficit might cause SRNA to fail the National Certification Exam (NCE).
- MR apps could help SRNAs fill knowledge deficits.
- **Objectives:**
- Determine if a correlation exists between SRNA mobile app use and quality/quantity of knowledge retained.
- Identify SRNA behaviors associated with MR app usage during clinical training.

Method:

- Descriptive, cross-sectional survey designed using DePaul's Qualtrics software and disbursed to CRNAs and SRNAs on Facebook page.

CRNA MR App Usage	SRNA MR App Usage
Average use: once/week	Average use: multiple times/week
Most used apps: Vargo, Google, Block Buddy	Most used apps: Vargo, Google, Block Buddy, Medscape, UpToDate
Most common uses: Look up surgical procedures, guide anesthetic management, seek information about medications, perform clinical calculations	Most common uses: Professional communication, look up surgical procedures, guide anesthetic management, seek information about medications, perform clinical calculations



Discussion:

- Vargo Anesthesia Suite had strongest positive correlation with overall app usage ($r = .70, p < 0.01$).
- Positive correlations between use of apps.
- Youngest respondents use MR apps significantly more than other groups

Implications for Nursing:

- Educators might recommend the apps found to be most useful:
Vargo Anesthesia Suite
Block Buddy
Google
Medscape
UpToDate

Conclusions:

- No significant correlation found between frequency of app usage and test performance ($r = -0.154, p = 0.462$).
- MR apps should not serve as a replacement for learning textbook information.

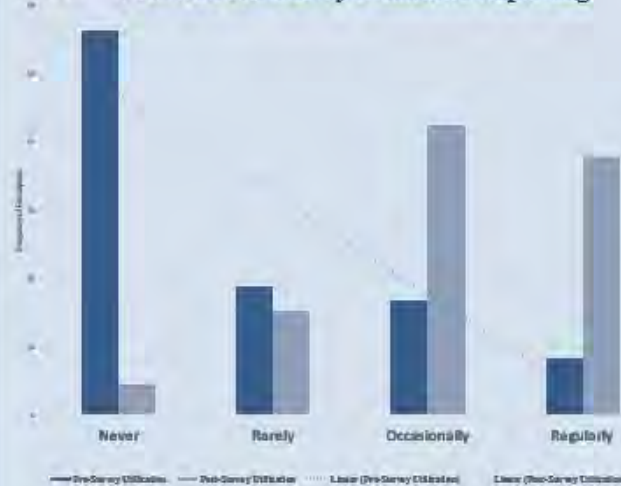
Background: Regional oximetry (rSO₂) is a continuous, noninvasive monitor of tissue oxygen delivery and utilization.

Anesthesia providers use rSO₂ to assess regional perfusion in adult and pediatric surgical patients. rSO₂ can be applied to improve post-surgical and anesthetic outcomes. rSO₂ monitoring utilization is currently limited in anesthesia practice.

Objectives: The objective of this study was to examine Illinois Certified Registered Nurse Anesthetists' (CRNA) current knowledge and utilization of rSO₂ and evaluate the impact of an educational tool on CRNA knowledge and prospective utilization of rSO₂ intraoperatively.

Method: Descriptive pre- and post-online survey methodology was used to provide quantitative information regarding the utility of an educational tool to assess improvement in knowledge and prospective utilization of rSO₂ among Illinois CRNAs.

Results: Pre-survey data found deficient knowledge among Illinois CRNAs. The mean pre-survey knowledge score was 78.4%. Forty-one percent (n=22) of participants reported no knowledge or poor knowledge of rSO₂. Self-reported current utilization of rSO₂ was low, 44% (n=21). After viewing the educational tool, an increase in knowledge from pre- to post-survey mean scores was demonstrated (p=0.001). Study participants' prospective utilization of rSO₂ in anesthesia practice increased by 51%. **Pre- vs. Post- Survey Utilization Reporting**



Discussion: The study's findings suggest the educational tool was effective in improving CRNAs knowledge of rSO₂ as evidenced by statistically significant increase in mean knowledge scores from 78.35% to 93.84% and a decrease in standard deviation from 51.82 to 13.12. A statistically significant amount of CRNAs achieved perfect scores on the post-survey, concluding that the study's educational tool armed CRNAs with evidence-based literature and improved their knowledge. CRNAs demonstrated an increase in self-reported prospective utilization after the study's intervention, as evidenced by only 4.5% (n=3) of CRNAs stating they would never use rSO₂, even if it was institutionally available.

Implications for Nursing: Perhaps increased awareness of the technology and improved CRNA knowledge can shift institutional trends toward a goal of enhanced patient care with rSO₂ use intraoperatively. Future research could identify specific practice patterns and knowledge gaps as well as assessing whether actual rSO₂ utilization increased.

Conclusions: An educational tool improved knowledge and prospective utilization, but a follow up study is necessary to determine actual increase in rSO₂ utilization.