NorthShore University HealthSystem
School of Nurse Anesthesia
&
DePaul University School of Nursing
Class of 2020
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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 they felt 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.
IMPLEMENTING POSITIVE LANGUAGE IN ANESTHESIA: UTILIZING THE COMFORT SCALE
Tricia Oaks RN, CCN, SRNA & Elisabeth Frehm RN, CCN, SRNA

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:
- Total of 56 NATs participated in this study
- Majority were women (n=38, 67.9%), and 32.14% were male participants (n=18)
- Essentially equivalent participation from all NAT years
- A wide variety of ICU, with the majority of participants falling under “3-4 years”
- Ethnicities of participants included White, Asian/Pacific Islander, & Hispanic
- The majority of participants were aged between 26-30 years old

- The mean score for the pre-test was 65% (n=56)
- The mean score for the post-test was 88% (n=56).
- On average, the post-test scores were 23.03% higher than the pre-test scores (95% CI, [18.61, 27.46])
- The paired t-test showed a statistically significant difference in the post-test mean scores (p =<0.01·; [-2.7456, -1.8615] 95% CI)
- 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 anesthesias each year -- important for this group to be utilizing the most up-to-date assessment tools
- Underutilization of the comfort scale is widespread due to 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
- N/A: 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

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

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 = 32)
- 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 = 130)
- Institution policy (n = 88)

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. When asked about potential interventions that could be implemented, students expressed interest in meditation. 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 classes. 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 an 85.7% return rate (n=18) out of 21 pre-survey respondents.

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

Question 1 and 7 found that the pre-survey showed a slight increase in stress, post-survey was completed during the first week of the global pandemic which could have contributed to this finding. There was a 6% increase in those that felt as though they were better able to control their stress, feeling 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% increase in those that felt as though they were better able to control their stress, 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. This is a population that requires attention.

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 (PNonM) Questionnaire: A Pilot Study**

**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 (PNonM) questionnaire. The PNonM 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 PNonM 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 (PNonM) questionnaire. Twenty-two of these CRNAs completed the PNonM for a second time to determine test/retest validity. The data collected was used to finalize a validated survey.

**Reliability statistics**

<table>
<thead>
<tr>
<th>Overall scale Cronbach’s alpha</th>
<th>No. of total items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.736</td>
<td>39</td>
</tr>
</tbody>
</table>

**Item-total statistics**

<table>
<thead>
<tr>
<th>Individual items</th>
<th>Scale mean if item deleted</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe that the effects of opioids are predictable</td>
<td>113.69</td>
<td>218.113</td>
<td>.336</td>
<td>.725</td>
</tr>
</tbody>
</table>

**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 PNonM 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 administration 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 PNonM questionnaire to a larger group of subjects in order to establish further validity and reliability. Through the use of the PNonM, healthcare change agents and anesthesia administrators will be able to identify barriers and facilitators to the administration of non-opioid modalities by CRNA's. 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 PNonM provides a greater understanding of facilitators, barriers, and moderators surrounding CRNA’s use of non-opioid modalities. These findings have important implications for practice and health care policy moving forward.

*Presented with support from the DePaul College of Science and Health Graduate Research Fund*
**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.

<table>
<thead>
<tr>
<th>Item</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>The simulation was pre-planned and easy to follow</td>
<td>1</td>
<td>4</td>
<td>3.24</td>
<td>0.783</td>
</tr>
<tr>
<td>Objective and procedures of the simulation were clearly communicated</td>
<td>1</td>
<td>4</td>
<td>3.22</td>
<td>0.700</td>
</tr>
<tr>
<td>The simulation created an emotional context necessary for performing successful FO intubation</td>
<td>1</td>
<td>4</td>
<td>3.22</td>
<td>0.700</td>
</tr>
<tr>
<td>The simulation was an effective sensor for improving your performance on FO intubation</td>
<td>1</td>
<td>4</td>
<td>3.76</td>
<td>0.779</td>
</tr>
<tr>
<td>Participating in the simulation enabled me to perform FO intubation</td>
<td>1</td>
<td>4</td>
<td>3.74</td>
<td>0.781</td>
</tr>
</tbody>
</table>

Overall Satisfaction Score: Mean = 3.73; SD = 0.77; Range = 3
Cronbach’s Alpha = 0.89

<table>
<thead>
<tr>
<th>Item</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>More confident in recognizing the appropriate anatomic landmarks when performing FO intubation</td>
<td>1</td>
<td>4</td>
<td>3.42</td>
<td>0.812</td>
</tr>
<tr>
<td>More confident in ability to perform an FO intubation</td>
<td>1</td>
<td>4</td>
<td>3.53</td>
<td>0.826</td>
</tr>
<tr>
<td>More efficient in performing the steps involved in successful FO intubation</td>
<td>1</td>
<td>4</td>
<td>3.55</td>
<td>0.826</td>
</tr>
<tr>
<td>More confident in recognizing situations where FO intubation is appropriate</td>
<td>1</td>
<td>4</td>
<td>3.00</td>
<td>0.817</td>
</tr>
<tr>
<td>More confident in ability to operate the FO bronchoscope</td>
<td>1</td>
<td>4</td>
<td>3.59</td>
<td>0.828</td>
</tr>
</tbody>
</table>

Overall Confidence Score: Mean = 3.52; SD = 0.81; Range = 3
Cronbach’s Alpha = 0.89

**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 pimpering 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 pimpering 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 pimpering 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 pimpering questionnaires adapted to fit the context of SRNA education.
- Remarkably, \( n = 85 \), 78.0% participants do not utilize pimpering 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 pimpering 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 pimpering:
  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 pimpering:
  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 pimpering 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 pimpering 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 skeletal muscle becomes highly depolarized on exposure to certain triggering agents (caffeine, halothane, isoflurane & desflurane).
- Frequent, symptomatic episodes (Mitchell, Smith, et al., 2013).
- Since there is no recognized disease associated with MH, a high index of suspicion is necessary, a method that creates the most realistic scenario for anesthesia providers in a simulation-based exercise (Mitchell, Smith, et al., 2013).
- Simulations provide controlled setting, enhanced competency, kinesthetic learning (Mitchell, Smith, et al., 2013).

Objectives:
- To assess the impact of a high-fidelity, simulated Malignant Hyperthermia crisis and its impact on anesthesia crisis management.
- To assess MH crisis management and its impact on the healthcare team's confidence in crisis management.
- To assess the impact of a high-fidelity simulation training exercise on improving crisis management confidence in identifying signs and symptoms during a MH crisis.
- To assess the impact of a high-fidelity simulation training exercise on improving crisis management confidence in the management of a MH crisis.
- To assess the impact of a high-fidelity simulation training exercise on improving crisis management confidence in their ability to prioritize interventions during a MH crisis.

Method:
Study Design:
- A single group, pretest-posttest design utilizing survey methodology evaluated the effectiveness of a high-fidelity crisis simulation regarding the management of malignant hyperthermia.

The goal was focused on improving confidence among the advocate clinical team. (MCN, 2010, 1249)
- The simulation method was adopted for better to determine the correlation between the scenario and the anesthesia confidence (Henry & Smith, 2014).

Sample Setting:
The setting consisted of a homogeneous group of all RNs at NorthShore University HealthSystem. A total of 35 RNs participated in the study.

The setting took place at NorthShore University HealthSystem and allowed the primary investigators to demonstrate their management of a controlled environment with NFMC simulation staff members.

A total of three scenarios were used to evaluate the crisis management confidence in performing crisis management using NFMC simulation staff members.

A total of 35 RNs participated in each scenario experience.

The simulation was represented as a scenario where the RNs were asked to handle the MH crisis, which ended up totaling nine RNs.

Instruments:
- The pre and post surveys were identical and included twelve questions composed by the primary investigators to evaluate the RN's confidence in performing crisis management using NFMC simulation staff members.

The questionnaire was presented using a 5-point Likert scale.
- The survey questions were itemized from the 30-item survey to determine MH crisis confidence.
- The pre-survey included 12 demographic questions requiring numerical response.

Results:

<table>
<thead>
<tr>
<th>Category</th>
<th>Survey Question</th>
<th>Pre Survey Average</th>
<th>Post Survey Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signs and Symptoms</td>
<td>1. I am confident in my ability to recognize the signs and symptoms of malignant hyperthermia.</td>
<td>3.45</td>
<td>3.95</td>
</tr>
<tr>
<td>Management</td>
<td>2. I am confident in my ability to organize and coordinate the prioritization of interventions.</td>
<td>3.33</td>
<td>3.75</td>
</tr>
<tr>
<td>Prioritizing</td>
<td>3. I am confident in my ability to prioritize interventions.</td>
<td>3.18</td>
<td>3.40</td>
</tr>
</tbody>
</table>

Discussion:
- The purpose of the UFHSA project was to examine the impact of an in vivo high-fidelity malignant hyperthermia simulation and its impact on anesthesia confidence in crisis management.
- Our key findings show improvements in overall confidence scores by all participants in all objectives. Participants specifically scored the highest in confidence in the management of Malignant Hyperthermia (MH) crisis after a simulation-based MH crisis exercise (McNally et al., 2014).
- The smallest change in confidence was in the area of identifying signs and symptoms which only increased by 46 points from pre to post-survey.

Implications for Nursing:
- Further research focused on the impact of high-fidelity simulation on crisis management among OHAs should be expanded in order to provide more data.
- While the results are an initial study, it would be beneficial for providers to regularly attend simulation-based training sessions to improve provider confidence.

- There is need for a larger, multi-site study in order to provide additional substantiation on the efficacy of high-fidelity simulation on MH crisis management.
- The impact of MH crisis is a critical component in the overall management of the patient and the healthcare team's ability to manage priority interventions during an MH crisis.

Conclusions:
- Malignant Hyperthermia is an extremely rare emergency; however, confidence in the management of MH among nurses may be lacking due to its rarity in clinical settings.

- This pilot study demonstrated that in vivo simulation provides CRNAs an opportunity to enhance the recognition of signs and symptoms, management, delirium, and prioritization of interventions required in an MH crisis.
- MH crisis simulation may ultimately lead to more effective response if and when an MH crisis is encountered in clinical practice.

Pre and Post Survey Results by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre Survey Average</th>
<th>Post Survey Average</th>
<th>Difference</th>
<th>Mean Difference</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signs and Symptoms</td>
<td>3.45</td>
<td>3.95</td>
<td>0.45</td>
<td>0.09</td>
<td>-0.25</td>
</tr>
<tr>
<td>Management</td>
<td>3.33</td>
<td>3.75</td>
<td>0.42</td>
<td>0.21</td>
<td>-0.36</td>
</tr>
<tr>
<td>Prioritizing</td>
<td>3.18</td>
<td>3.40</td>
<td>0.22</td>
<td>0.13</td>
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Correlation of Mobile Device Application Use During Student Registered Nurse Anesthetist Training and First Time NCE Pass Rates
Morgan Lewis, BSN, RN and Garrett Sawyer, BSN, RN

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.

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

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%.

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 5.12 to 13.12. A statistically significant amount of CRNAs achieved perfect scores on the post-survey, concluding that the study’s educational tool aided 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.