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Experiences of CRNAs during the COVID-19 pandemic: A qualitative analysis

The COVID-19 pandemic strained healthcare providers, including Certified Registered Nurse Anesthetists (CRNAs), who experienced new stressors and roles. Little research focuses on the effects of the COVID-19 pandemic on CRNAs, whose unique skill set implies a different experience than other disciplines. The purpose of this study was to examine the experiences of CRNAs during the COVID-19 pandemic to identify themes for theory generation.

This qualitative study consisted of interviews with twelve CRNAs. Five identified themes, from the interviews, included Roles of CRNAs, Collaboration, Challenges, Mental Health Implications for CRNAs, and Pride in Profession. Participants noted their roles changing during the COVID-19 pandemic. The pandemic had negative implications on CRNA's mental health, while newfound challenges were also cited. CRNAs also mentioned new methods of teamwork and an increased pride they felt in their profession.

This study was the first to qualitatively examine the effects of the COVID-19 pandemic on CRNAs and identified critical areas for further investigation and need for CRNA support that require prompt attention. The essential position CRNAs held was highlighted, along with the impact they felt.

Results: Post-survey results demonstrated a statistically significant increase in students' confidence with using the C-MAC videolaryngoscope to intubate an infant manikin.

Conclusion: This study demonstrates the importance of hands-on simulation for high-stakes procedures and the need for standardized infant airway management simulations in nurse anesthesia programs.

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The Effect of Simulation of Infant Intubation with C-MAC Videolaryngoscope on the Knowledge and Confidence of Student Registered Nurse Anesthetists
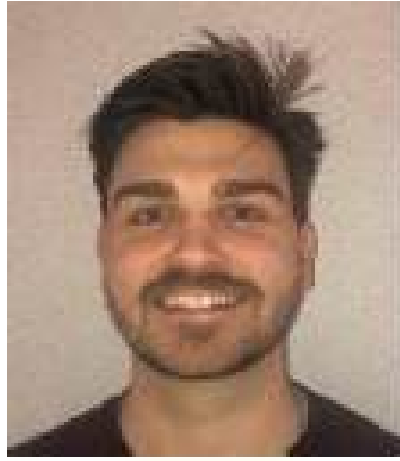
Background: The use of C-MAC videolaryngoscope is associated with higher first-pass success rates when intubating infants and is an effective tool when teaching novice providers to intubate.

Objectives: To examine the impact of an infant airway educational video and simulation utilizing the C-MAC videolaryngoscope with Miller 0 and 1 blades to intubate infants on the knowledge and confidence of second-year student registered nurse anesthetists' management of the infant airway.

Methods: A quantitative pre/posttest research study. A survey tool, developed by the researchers, was used to assess the knowledge and confidence of participants in intubating the infant airway with a C-MAC videolaryngoscope before and after viewing an educational tool and participating in a hands-on simulation.

The revised materials read at the 5th grade reading level on the Fry readability graph and score superior suitability on the SAM tool.

It can be expected the revised Spanish PEMs will optimize surgical outcomes through improved patient comprehension.

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Enhancing Orthopedic Patient Education in the Surgical Brigade Setting: A quality improvement project

The scope of impact and ethical considerations surrounding the transient nature of medical service trips (MSTs) remains unclear. Quality care can be ensured with the implementation of culturally appropriate patient education materials (PEMs). Such materials are consistently identified as low-cost tools in producing enhanced pre-and post-surgical outcomes.

This project formally analyzed post-operative PEMs utilized by a non-governmental organization (NGO) that conducts MSTs in Honduras. The readability and suitability of the current PEMs in use were evaluated before identifying specific areas of improvement. Quality improvement of materials began with formal assessment of current PEMs utilizing validated tools (Fry readability graph and the SAM suitability tool). Previously existing patient education materials read at the 10th -grade reading level and lacked suitability for the specific patient population.

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Desflurane: CRNA Utilization and Knowledge of Environmental Impact

Background: Climate change represents one of the largest threats to global and public health. Of the volatile anesthetics, desflurane, a greenhouse gas, is the largest contributor to climate change but is still commonly used in many healthcare facilities. There is a lack of formal environmentally responsible healthcare education in the anesthesia curriculum that may be contributing to Certified Registered Nurse Anesthetists' (CRNAs) knowledge deficit of desflurane's impact.

Purpose: The purpose of this study was to assess the effect of an educational intervention on CRNAs' knowledge and intent to modify desflurane use. The study also examined sociodemographic characteristics, workplace settings, and personal practice data for any significant association with CRNAs' use of desflurane.

Methods: Descriptive electronic-based pre and post-survey approach was used to obtain quantitative data regarding CRNA knowledge of desflurane's impact on the environment pre and post-intervention and intention to modify practice. The sample included actively practicing CRNAs. Validated pre-test, educational tool and post-test were utilized.

Results: After viewing the educational intervention, an online voice-over infographic, there was a statistically significant increase [paired t-test, ($p<0.001$)] in mean test scores of CRNA knowledge of the environmental impact of desflurane and 47.47% of participants reported they would modify their use of desflurane.

Conclusions: An educational tool was effective in increasing knowledge and demonstrated CRNAs intent to modify desflurane use.

Keywords: CRNA, desflurane, environmental impact

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Anesthetic Implication of Vaping: A Survey of Anesthesia Providers' Knowledge of Vaping and Intent to Utilize Vaping Knowledge into Practice.

Background: Electronic cigarettes, also known as vapes, are a popular smoking cessation tool whose popularity has been on the rise in recent years. Users of electronic cigarettes are at increased risk of developing a variety of diseases, particularly those of the cardiovascular and respiratory systems, which have implications for the administration of anesthesia. Given their increasing popularity, anesthetists will likely encounter greater numbers of patients who use vape products. Therefore, it is essential for anesthesia providers to have the knowledge and skills to properly assess patients for vape use in order to adapt their anesthetic approach.

Purpose: The purpose of this study is to evaluate the impact on knowledge and future intent to utilize new clinical knowledge regarding the assessment, evaluation, and anesthetic implications for patients who vape electronic-cigarettes after reviewing an evidence-based educational module amongst certified registered nurse anesthetist and student registered nurse anesthetist.

Method: This study utilized a pre-and post-test design. Anesthesia providers were surveyed prior to and after receiving a voice-over PowerPoint® presentation to gather information regarding participant knowledge. Participant's pre-test baseline knowledge was compared to the post educational knowledge to evaluate the impact of an education tool on enhancing providers knowledge and future intent to utilize new clinical knowledge regarding the assessment, evaluation and anesthetic implications for patients who vape electronic cigarettes.

Results: Participants who viewed the education module were more likely to have an increased knowledge of vaping and its implications in anesthesia practice. In addition, survey data illustrated that providers have limited baseline knowledge on the anesthetic implications of vaping, and that education interventions, such as VOPP, greatly improve their knowledge on the topic. Lastly, survey data revealed that participants agree that vaping has implications in anesthesia and the vast majority of participants reported their intent to incorporate new vaping knowledge into clinical practice.

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A Choose Your Own Adventure Simulation Improves Provider Confidence and Knowledge of Postpartum Hemorrhage Management

Background: Postpartum hemorrhage (PPH) is a low frequency, high acuity complication of childbirth and a major cause of maternal death worldwide. Anesthesia providers caring for peripartum women have the professional responsibility to prepare for the challenge of responding to a PPH emergency.

Purpose: The purpose of this study was to examine the effect of a Choose Your Own Adventure (CYOA) interactive video simulation on student registered nurse anesthetists' (SRNAs) and certified registered nurse anesthetists' (CRNAs) confidence and knowledge in PPH identification and management.

Method: This study utilized a pretest-posttest design with a CYOA simulation depicting a PPH emergency. Participants completed a confidence survey and knowledge assessment immediately before and after the simulation.

Results: Average confidence scores increased by 3.5 points, and average knowledge assessment scores increased by 27.16% pre- to post-intervention. Second and third year SRNAs had similar increases in confidence and knowledge scores, of 3.63 and 3.93 points, and 31.25% and 26.78%, respectively. CRNAs had the smallest score increases of 2.33 points and 22.92%.

Conclusions: This study demonstrates that CYOA is an effective way to improve SRNAs' and CRNAs' confidence and knowledge in identification and management of a PPH emergency. Further research is needed to determine if improvement in confidence and knowledge translates to improved patient outcomes.

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Choose Your Own Adventure: Malignant Hyperthermia

Background: Malignant hyperthermia (MH) is a rare and often fatal hypermetabolic state triggered by commonly administered anesthetic drugs. It is important that student registered nurse anesthetists (SRNAs) receive an adequate amount of education surrounding the recognition and treatment of MH. Decision-based simulation has been shown to be an effective way to improve critical thinking skills. The purpose of this project is to create a Choose Your Own Adventure (CYOA) decision-based video simulation for the recognition and treatment of intraoperative malignant hyperthermia and to examine its effect on confidence and knowledge in SRNAs.

Sample: A convenience sample was obtained consisting of SRNAs at NorthShore University HealthSystem School of Nurse Anesthesia (NSUHS SONA). A total of thirteen (N=13) participants completed the study.

Method: Participants were measured using a 4-point Likert Scale confidence assessment and an 8 question Knowledge Assessment Tool (KAT) before and after the simulation. The CYOA decision-based simulation scenarios were scripted and formulated to run in dynamic sequence with branch points for effective and ineffective recognition and treatment strategies.

Results: Knowledge scores increased from 69.23 to 84.62 (p< 0.05) and confidence scores increased from 12.77 to 18.92 (p< 0.05).

Conclusion: Problem based learning methods such as decision-based video simulation proves efficient in improving both subjective confidence and objective knowledge scores in SRNAs.

Keywords*:* malignant hyperthermia (MH), simulation, decision-based simulation, problem-based simulation, student registered nurse anesthetist (SRNA)

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Evaluation of Intraoperative BIS Monitoring and the Effects On Sevoflurane Administration: A Retrospective Chart Review

The Bispectral Index (BIS) monitor is an important monitoring tool in anesthesia care. It measures cerebral electrical activity in the patient under general anesthesia. Despite its unique capabilities, there are no specific recommendations to its use due to conflicting evidence in the literature regarding BIS monitoring advantages and disadvantages.

The purpose of this study is to examine whether the use of a BIS monitor intraoperatively decreases administration of sevoflurane. A retrospective chart review was utilized to evaluate whether there is any correlation with the use of a BIS monitor and total sevoflurane consumption. The authors hypothesized that application of a BIS monitor intraoperatively would decrease the amount of sevoflurane administration.

Total amount of anesthetic gas administered during a procedure to patients, with and without the use of a BIS monitor, during a wide range of specific procedures.

<0.001). This negative linear relationship indicates that as SRNA emotional intelligence increases, workplace stress decreases.

The results of this study can help guide educators to incorporate emotional intelligence into admissions criteria as well as into educational curriculum. **Keywords:** *stress, emotional intelligence, workplace stress, SRNA, SRNA stress*

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The Relationship Between Emotional Intelligence and Student Registered Nurse Anesthetist Workplace Stress

Nurse anesthesia training programs are highly competitive and rigorous, which can contribute to increased stress levels in students. Research to date has demonstrated that CRNAs who reported higher levels of emotional intelligence tended to report lower overall workplace stress levels, however, no known studies have examined this relationship among student registered nurse anesthetists (SRNAs).

For this study, the SRNA workplace was defined as didactic coursework, clinical residency, and all other commitments pertaining to the SRNA's education and training. This study described and examined the relationship between levels of emotional intelligence and levels of workplace stress among SRNAs.

Findings from this study found a significant correlation between workplace stress levels and emotional intelligence (r = -.308, P

significant. SRNAs had higher posttest scores and greater improvement in scores as compared to CRNAs *(P<.05 respectively)*. 46.9% of CRNAs and 20.8% of SRNAs reported podcasts as the most beneficial learning method. The majority of CRNAs and SRNAs reported listening to podcasts 1-2 times per month.

Conclusion: Based on the results of this study, we have concluded that podcasts are an effective means to provide education on perioperative care of the cannabis user to the nurse anesthesia community. Podcasts are a useful, well-liked learning modality that should be encouraged in anesthesia education.

Key Words: *podcast, cannabis, education, anesthesia, learning*

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GAS AND GRASS: Evaluating the effectiveness of a podcast for providing cannabis education for anesthesia providers

Purpose: The primary purpose of this study was to evaluate the effectiveness of a podcast episode for providing education to Certified Registered Nurse Anesthetists (CRNAs) and Student Registered Nurse Anesthetists (SRNAs) on the anesthetic care of the cannabis user. The secondary purpose of this study was to evaluate how CRNAs and SRNAs use podcasts to supplement other learning methods.

Methods: This study used a pretest, posttest survey methodology to evaluate learning after a podcast intervention. The study sample included 73 CRNAs and SRNAs practicing anesthesia both within the United States and internationally, who listened to the podcast episode within the study period. Groups were compared using non-parametric tests.

Results: The increase in scores from pretest to posttest was statistically significant for both CRNAs and SRNAs *(P<.001 respectively)*. CRNAs had higher pretest scores, but this was found to not be statistically

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Assessment of CRNA Knowledge & Utilization of Magnesium Sulfate in the Preoperative Period

Background: Magnesium has many clinical indications including analgesia, reducing anesthetic requirements, potentiating non-depolarizing muscle relaxants, and blunting the autonomic response to noxious stimuli. Despite clear benefits in current literature, there is a lack of literature examining anesthesia Additionally, there was a 52.7% increase in prospective perioperative utilization of magnesium from the baseline assessment after viewing the educational tool.

Conclusion: Magnesium is a useful adjuvant drug in anesthetic practice. An educational tool is an effective method to increase CRNA knowledge and encourage future utilization.

Keywords: *magnesium sulfate, perioperative, anesthesia, educational tool* provider knowledge and utilization of magnesium in the perioperative period.

Purpose: The purpose of this study was to examine the impact of an educational tool on knowledge and likelihood of future utilization of magnesium in the perioperative period by Certified Registered Nurse Anesthetists' (CRNAs) in Illinois.

Methods: A quantitative, descriptive pre- and post-test online survey design.

Results: Sixty-three Illinois CRNAs completed the survey. Viewing an educational tool on the perioperative uses of magnesium significantly increased mean knowledge scores from 62.9% to 83.2% (p ≤ .001).

savings. Further interventions are needed to educate staff and ensure buy-in.

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Debunking Anesthetic Myths Regarding Low-Flow with Sevoflurane: A Chart Review and Cost Analysis Study

Current research shows preserved renal function in humans with low-flow anesthesia (LFA) and sevoflurane. This study examined if an educational flyer advocating for LFA with sevoflurane increases LFA usage and determined the cost implications. A chart review was completed to evaluate flow rates before and after dissemination of an educational flyer. A cost analysis using the Biro equation was done to determine cost of sevoflurane consumption and estimate potential savings. The total number of minutes using FGF rates ≤1 L/min increased from 208 minutes to 239 minutes and the average FGF rate decreased in the post-intervention group. However, there were more minutes in the post-intervention group and when FGF ≤1 L/min were used, they were only used for a short period of time, suggesting the reduction in FGF rate was likely not an intentional use of LFA technique. Using a Pearson's correlation, a significant correlation comparing case time with average FGF rates ($r = -0.3621$) and LFA minutes ($r = 0.2015$, $p < 0.05$) was noted. Had providers reduced the average FGF from 2.075 L/min to 1 L/min, there would be a 50% cost