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Poster Abstracts

Quantitative Research

Gas and Grass: Evaluating the Effectiveness of a Podcast for Providing Cannabis Education for Anesthesia Providers

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Introduction: Recent broad legalization of cannabis has been occurring on a state level across the United States. It is expected that Certified Registered Nurse Anesthetists (CRNAs) and student registered nurse anesthetists (SRNAs) will encounter patients with acute or chronic cannabis use, which can have staggering anesthetic considerations. Currently, cannabis education is not a formal part of CRNA training. A recent survey of CRNAs and SRNAs found that a majority of respondents did not feel comfortable with their working knowledge about the endocannabinoid system. Research supporting the use of podcasting within the medical community to increase knowledge on various topics exists, however no research was found evaluating podcast use within the nurse anesthesia community. This study aimed to evaluate whether podcasting is an effective method of delivering cannabis education to CRNAs and SRNAs.

Methods: The study used a pretest-posttest design to evaluate learning after a podcast episode discussing cannabis and anesthesia. A literature review was completed to develop the podcast episode content and IRB approval was obtained prior to study implementation. The episode was recorded and released on a well-known anesthesia podcast. Participants were recruited via email, Facebook, and through the podcast episode itself, with 75 CRNAs and SRNAs completing the study in its entirety. Participants who chose to participate were instructed to complete the pretest, listen to the podcast episode, and then complete the posttest. The study was open for two months in 2021. Demographic data and information on the participants' current podcasting and learning preferences were obtained with the pretest. The posttest included additional questions on the participants' opinion of the podcast episode. SPSS version 26 was used for statistical analysis, including frequencies, descriptive statistics, and paired samples *t*-test.

Results: While 203 participants started the study, only 75 participants completed the study in its entirety (49 CRNAs, 24 SRNAs, 1 physician, and 1 student). Mean age of participants was 40.97 years of age. Most participants were in their first 5 years of practice (46.7%), with an overall mean of 9.09 years in practice. 97% of participants were practicing in the United States, with 3% in Asia and Europe. Most participants were affiliated with a teaching hospital (50.7%) or community hospital (34.7%). 76% of participants were extremely satisfied with the usability, 74.7% extremely satisfied with the content, 66.7% extremely satisfied with the delivery, and 72% extremely satisfied with the technical elements of the podcast episode. Most participants reported using a podcast to supplement education at least monthly. The mean score increase from pretest to posttest was statistically significant ($P<.001$) for both CRNAs and SRNAs. Participants not self-identifying as a CRNA or SRNA were not included in the analysis.

Discussion/Conclusion: There was a statistically significant increase from mean pretest score to mean posttest score, indicating the effectiveness of the podcast episode for both CRNA and SRNA learning. The Cohen's d was high for both CRNAs (2.384) and SRNAs (2.483), indicating a large effect of the intervention on pretest and posttest scores. Additionally, the mean pretest score was higher in the CRNA group (6.63 v. 5.92), while the mean posttest score was higher in the SRNA group (10.5 v. 9.8),

potentially indicating increased effectiveness of the podcast for SRNAs. Participants reported extreme satisfaction with the usability, content, delivery, and technical elements of the podcast, further indicating the benefits of using a podcast episode. Participants found podcasts to be the most beneficial learning method (38.7%), followed by YouTube videos (25.3%), recorded lectures (14.7%), and textbooks (10.7%). Limitations of the study include the small sample size and short data collection period. The study focused on evaluation of learning on a specific topic, and further research must be done to evaluate the effectiveness of a podcast on other topics. Overall, the study indicated that podcasts are an effective, well-liked learning adjunct in nurse anesthesia. Nurse anesthesia faculty, nurse anesthesia students, and practicing CRNAs can benefit from podcast use to supplement other learning methods.

Creating A Predictive Model of Student Success in Certified Registered Nurse Anesthetist Graduate Programs

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Introduction: Identifying CRNA candidates who will be academically successful and who can successfully transition into the workplace may not always be apparent. Criteria such as GPA and GRE scores are two cognitive measures traditionally required in the admissions process. Current literature supports the idea that in addition to these cognitive measures, candidates' critical thinking, emotional intelligence, safe/unsafe personality characteristics, clinical experience, and time away from educational settings be considered to strengthen admission criteria. This study investigated the relationship between one or more variables and candidates' programmatic success in an MSN CRNA program. Redefining admissions criteria may facilitate the entry of students who possess the cognitive and nontechnical skills necessary to support academic and professional success.

Methods: The population were individuals who provided application data to an MSN CRNA program between 2014-2018. The study participant sample were candidates who were interviewed, offered a position, and started the program, and interviewed candidates who failed to advance past the interview stage. Subsets of the sample population included students who enrolled and completed the program between 2016-2020 and students who enrolled and did not complete the program. The quantitative nonexperimental study utilized existing data from admissions materials. These were self-reported data, such as personal demographic attribute variables; and third-party verified data such as undergraduate and graduate grade point averages, GRE scores, Health Sciences Reasoning Test (HSRT) scores, and NCE scores. The study incorporated an associational research approach, one that enabled examination of potential relationships between variables with the specific purpose of identifying associations, rather than causes, that enabled the development of a predictive model.

Results: Statistically significant positive correlations were found between students' HSRT and GRE scores ($r = .496$, $P = .000$). The moderate negative correlation found between the amount of time working in ICUs and academic success ($r = -.232$, $P = .008$) mirrors those of Burns (2011). The study further supports El-Banna et al (2015) findings that those students with 6+ years clinical experience were significantly less likely to be academically successful. Students' HSRT quartile scores were a statistically significant predictor of on-time completion ($x2 (15) = 133.281$, $P = .000$). The weak/moderate positive correlation between HSRT scores and NCE scores ($r = .257$, $P = .004$) aligns with Huhn and Parrott (2017) findings of a moderate positive relationship between HSRT and National Physical Therapy Examination (NPTE) scores and their finding that HSRT scores contributed in predicting students' academic success. As was demonstrated in the current study, the inclusion of HSRT scores in predictive modeling significantly improved the models' strength.

Discussion/Conclusion: This study addressed identified gaps in the literature regarding graduate nursing programs. These gaps are the relationships between critical thinking and admission, retention, and programmatic success, and the possibility of developing a predictive model for CRNA student success. Additional research is warranted surrounding the issues of time away from academic environments and length of time spent in the work environment. Students who were away from academia for a long period and/or who worked in ICUs for an extended length of time exhibited academic struggles and often academic failure. Continued study of CRNA programs' admissions criteria and the development of student success predictive models is suggested, as the model presented accounted for only 16.9% of the variance. This study reaffirmed the minimal impact of GRE and GPA scores on predicting academic success, accounting for only 4.9% of model's variability. This study identified that statistically significant

predictive modeling of academic success in CRNA programs should include the following: critical thinking aptitude; length of time employed in an ICU; length of time away from school prior to enrolling; as well as GRE and GPA scores. As the profession transitions to the DNP model, study is warranted into the components required of candidates and the additional factors that may serve as valid predictors of success.

Quality Improvement

Preventing Spinal Induced Hypotension in Geriatric Orthopedic Patients with Ondansetron

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Background: The clinical practice change targets the geriatric orthopedic population at this community hospital receiving spinal anesthesia (SA) to reduce the incidence of spinal induced hypotension (SIH). Anesthesia providers at this institution estimate that SIH, defined as a 20% decrease in systolic blood pressure (SBP) from baseline, occurs in approximately 30% of this specific patient population. Reducing the incidence of SIH will improve surgical start times, decrease vasopressor administration, and improve patient outcomes.

Method: Anesthesia providers received education regarding the incidence of SIH in the geriatric orthopedic population and the research data supporting prophylactic use of ondansetron. Anesthesia staff were asked to administer and document 4 mg IV ondansetron 5 minutes prior to SA in patients who met inclusion criteria. Inclusion criteria are patients 65 years of age or older who are undergoing orthopedic surgery under SA that have no contraindications to ondansetron administration, such as allergy or prolonged QT interval on EKG. Data were collected via chart review, de-identified, and documented into the SIH Data Collection Tool. Patients who experienced a decrease of 20% or greater from their baseline systolic blood pressure within 20 minutes of SA were considered to have SIH.

Results: A total of 183 patient charts were reviewed, but only 74 patients' data were eligible to be included in the results. The patients whose data were not included were excluded either due to not meeting the inclusion criteria described above, already receiving ondansetron in the pre-operative area for nausea prophylaxis, inadequate timing of ondansetron administration outside of the recommended 5 minutes, or failed spinal that required conversion to general anesthesia. Of the 74 patients who were administered the ondansetron and completed the orthopedic procedure under SA, 32% experienced SIH. This is a decrease from the pre-implementation rate of 80%-85% incidence of SIH.

Discussion: The criteria for defining SIH (SBP <20% of calculated baseline blood pressure or SBP less than 90 mmHg via non-invasive blood pressure measurement) was the same for the quality improvement project as it was for the research data utilized. Inclusion and exclusion criteria were also the same. The variable was the dosage of the ondansetron administered. Baig et al (2017) found that administering 6 mg of IV ondansetron 5 minutes prior to spinal anesthesia was effective in attenuating hypotension. Hypotension was reported in 7.5% of cases for the intervention group and 28.3% of cases for the control group (*P*=.005). A systemic review with meta-analysis, Gao et al (2015), found that prophylactic administration of IV ondansetron prior to spinal anesthesia was effective in preventing hypotension when compared to administration of a placebo (*P*=.0005). The doses of ondansetron varied between 4 mg, 6 mg, 8 mg, and 12 mg depending on the studies reviewed. Regardless of the dose, prophylactic administration of ondansetron reduced the incidence of spinal anesthesia-induced hypotension with a RR of 0.40 (95% CI 0.24 to 0.67, *P*=.0005. Finally, the double-blinded randomized controlled trial by Shah et al (2016) found that patients who received 8 mg IV ondansetron 5 minutes prior to SA had lower incidence of SIH than the control group with 46% compared to 68% respectively. The quality improvement project utilized administration of 4 mg of ondansetron after staff expressed concern for prolonged QT interval with higher doses.

Limitations to the quality improvement project included decreased volume of patients due to the COVID-19 pandemic. Another limitation was the lack of consistency between doses and spinal needle utilized. There is no definite calculation of spinal dose based on height or weight; therefore, the dosing is at the anesthesia providers' discretion. Anesthesia provider preference also dictates the spinal needle utilized. These factors can greatly affect the height of the spinal block and influence the degree of SIH. In addition, the patient positions varied between sitting or side-lying for SA which also influences the spread of the local anesthetic. Finally, the limitation of assessing patient hydration prior to SA can also influence SIH since there are studies that include co-loading or pre-loading intravenous fluids for the spinal. Patients who are dehydrated are at higher risk of requiring vasopressor administration. Implications for practice and further study in the field should include more uniformity regarding the local anesthetic dose, spinal needle, lumbar site for SA, patient position for SA, hydration status, positioning of blood pressure cuff, and intravenous access site and size. Utilization of different ondansetron doses and the incidence of prolonged QT interval would also be helpful in defining a true adequate dose for SIH prevention without negative sequelae.

Implementing Mindfulness Meditation to Reduce Perceived Stress Among Student Registered Nurse Anesthetists

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Background: Student registered nurse anesthetists (SRNAs) cope with both academic and clinical stressors that can lead to an increase in stress levels. SRNAs experience stress not only in adapting to new didactic and clinical settings, but from imbalances of personal and professional life (Chipas et al, 2012). Although stress is essential to stimulate learning, excessive stress can lead to ineffective coping skills and poor self-care behaviors (Hicks, 2015). Mindfulness meditation is recommended for the prevention and management of stress, which can enhance academic success (Burton et al, 2017; Hofmann & Gómez, 2017). Mindfulness meditation is a skill and a practice to strengthen the ability to adopt a mindful state throughout the stressors of life. When practiced over time, this skill can decrease stress, improve student well-being, and enhance academic performance (McConville et al, 2017). The purpose of this quality improvement project was to develop and implement a mindfulness meditation activity to reduce perceived stress levels in second- and third-year SRNAs.

Methods: The mindfulness meditation intervention was available to second- and third-year SRNAs via the SRNA Wellness Website. It included a "Mindfulness" tab on the homepage that directs students to the Mindfulness Meditation PowerPoint presentation material consisting of an introductory video describing the intervention. A schedule was posted with links to free, 5- to 10-minute guided mindfulness meditation exercises for each of the 5 weeks. Upon completion of the implementation, a post-intervention survey was sent via email to each of the participants. This survey included the same Perceived Stress Scale survey that was sent out during the needs assessment survey, as well as questions about the frequency of visiting the SRNA Wellness Website and the participation in the mindfulness meditation intervention. The pre-intervention survey and post-intervention survey was compared to determine if there was a decrease from moderate to low perceived stress levels in the Perceived Stress Scales among second- and third-year SRNAs.

Results: Twelve second-year SRNAs and nine third-year SRNAs completed the pre-intervention survey including the Perceived Stress Scale (PSS). Results revealed that eleven of twelve second-year SRNAs experienced a moderate level of perceived stress while one of the twelve experienced a high level. The pre-intervention survey revealed an average of 21.42 PSS score. Second-year SRNAs identified starting clinicals, lack of income, the DNP project, and time management were significant contributors to stress. From the survey, all third-year SRNAs experienced a moderate level of perceived stress. The third-year SRNAs identified clinical and life imbalance, difficult personalities at clinical, DNP project, role change from nurse to novice SRNA, and time management were significant contributors to stress. Ten second-year and three third-year SRNAs participated in the post-intervention survey with an average PSS score of 20.31, indicating a moderate stress level. There is a slight decrease of 1.12, or 5.23% from the pre- to the post-intervention survey.

Discussion: SRNAs encounter a variety of stressful experiences while learning and practicing the skills and administration of anesthesia. Unmanaged stress can lead to negative coping mechanisms that can contribute to illness, sleep deprivation, higher rates of substance abuse, low self-esteem, and unhealthy eating patterns. The practice of mindfulness medication can provide students with a tool or method to manage stress. Improving stress management can improve student well-being and enhance academic performance. SRNAs recognized starting clinicals, the DNP project, and lack of time management as significant contributors to stress while in the nurse anesthesia program. The inference cannot be made

that the mindfulness meditation intervention had a significant effect on the SRNAs' PSS scores. However, there was an overall decrease in PSS by 5.23%. Limitations include recall bias as the same tools were used for the pre-intervention and post-intervention surveys. The population size was small and it was specifically from two cohorts at a school, limiting the generalizability. Future research can build on this study by identifying significant events that lead to stress in SRNAs and frequency of utilizing mindfulness meditation to determine if individuals received benefits from the mindfulness meditation intervention.