

Podcasts as a Learning Adjunct in Nurse Anesthesia Education

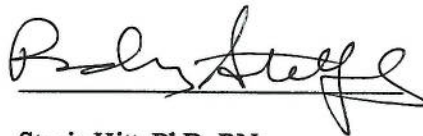
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Abstract

Educational approaches are constantly evolving due to influences from technology and improvements in the resources that are available to educators as well as learners. Current literature suggests that utilizing podcasts in addition to conventional educational methods contributes to a higher level of satisfaction among learners. The goal of this translational research project was to provide student registered nurse anesthetists (SRNAs) with educational podcasts as an adjunct to their traditional learning process and then measure their satisfaction after listening to the podcasts. A series of six educational podcasts were recorded and made available on *From the Head of the Bed*, which is a free podcast platform for the anesthesia community that is available to Apple, Android, Spotify, or Rich Site Summary (RSS) users. The intervention of using educational podcasts was intended to supplement and reinforce customary learning practices in nurse anesthesia education. A post-intervention anonymous online survey was administered to the SRNAs at Marian University. A mixed methods study design was developed to assess the satisfaction of the educational podcasts.

Keywords: Podcasts, learning, education, nurse anesthesia, SRNA, CRNA, SSEPQ

Podcasts as a Learning Adjunct in Nurse Anesthesia Education

Introduction

Utilizing technology in education has made options like podcasting, a new and popular way to engage learners and provide variety to the educational process. People learn in different styles and settings, and this realization has created a paradigm shift in the delivery of education. This shift also reveals millennial learners' preferences toward education, which include stimulating activities as well as the option to multitask while learning. Student Registered Nurse Anesthetists (SRNAs) have demanding schedules between clinicals and didactic responsibilities, leaving little time available to study and review clinical concepts. A previous systematic review of the literature revealed that podcasts improve test scores and are a satisfactory method of disseminating educational information to students in this modern era of learning where they enjoy multitasking and studying with technology (Rouhselang, 2018). Even though educational podcasts do exist, there are very few that are related to anesthesia.

Background

According to Rainsbury and McDonnell (2006), a podcast is “a whole new medium for disseminating news, views, and education as a downloadable audio or video file to store in your pocket and listen to or view at your leisure (p.481).” An educational podcast can be developed based on expert content that is then recorded on a computer and uploaded to a service, allowing listeners to download or stream the episodes that they choose (Andrejco, Lowrance, Morgan, Padgett, & Collins, 2017). An overarching advantage of podcasting is the unique ability for learners to multitask by listening to them while driving, cooking dinner, cleaning, or working out, which makes efficient use of time that would otherwise be unavailable for other, more traditional forms of learning (Wolpaw & Toy, 2018). SRNAs experience intense workloads with

limited time for additional tasks. Current literature suggests podcasts are advantageous for learners who want supplementary information at their fingertips.

Problem Statement

It is clear that podcasts could be an important, but as of yet under-explored, learning adjunct in nurse anesthesia education. Proposing an intervention to develop, produce, and measure the satisfaction of podcasts focused on SRNA educational content can be a valuable reinforcement tool for traditional learning.

Review of Literature

This literature review was undertaken to understand the current state of podcasts as possible adjuncts in higher education. Many of the studies reviewed were similar in their purposes to assess whether podcasts are an effective tool as an alternative learning strategy however, their study designs testing that hypothesis varied slightly. Alternative methods of podcast implementation in education were also explored. For the purpose of this literature review, the term “traditional learning modalities” refers to either in-class lectures or reading a textbook. The chosen articles have been reviewed under three distinct subheadings: podcasts vs. traditional learning modalities, podcasts in conjunction with traditional learning modalities, and alternative podcast implementations.

Podcasts vs. Traditional Learning Modalities

Four publications, two randomized controlled trials and two quasi-experimental studies analyze data to determine whether test scores are higher after students learn by listening to podcasts or after a combination of classroom lectures and textbook readings. McKinney, Dyck, and Lubar (2009) determined that listening to a podcast lecture is an advantage over attending a traditional lecture ($p \leq 0.05$). McKinney et al. (2009) also noticed a favorable quality among

educational podcasts which gave the learner the ability to listen to the podcasts as many times as they wanted. This attribute allows the learner to review any of the content in a purposeful and topic-specific way that traditional lectures do not. Conversely, another early quasi-experimental study published by Vogt, Schaffner, Ribar, and Chavez (2010) found there to be no statistically significant improvement in the scores of three different exams ($p=0.22$, $p=0.06$, $p=0.11$) when administered to two groups of undergraduate nursing students ($n=120$), one who received a traditional lecture and one who received an audio podcast. A more recent randomized controlled trial published by Back et al. (2017) reviewed the effect of podcasts over textbook readings in a group of medical students ($n=130$) and found that the group who listened to the educational podcasts scored significantly higher on the post-test than the group who read from textbooks ($p<0.021$). Another randomized controlled trial compared two groups of second year medical residents ($n=49$), one who listened to podcasts and one who learned through traditional lectures and found that the podcast arm of the study had statistically higher scores than the control group ($p<0.01$) (Brust, Cooke, & Yeung, 2015).

An additional factor that should be considered is the user satisfaction of the podcast against more traditional learning methods. McKinney et al. (2009) did not test user satisfaction. Vogt et al. (2009) administered a six-question satisfaction survey that found the users to be satisfied with the podcasts, but preferred traditional lectures (63%) over the podcasts. It is possible that lack of familiarity with podcasts influenced satisfaction at a point in time when podcast development was very new. Brust et al. (2015) found no difference in user satisfaction between the podcast learners and traditional lecture learners ($p=0.37$). Finally, Back et al. (2017) reports an increase in user satisfaction of podcasts over reading textbook chapters. Overall, the satisfaction of podcast use is equal to or higher than traditional learning media.

Podcasts in Conjunction with Traditional Learning Modalities

Two publications, one randomized controlled trial and one quasi-experimental study, analyze data to determine whether test scores are higher after students learn by listening to podcasts in addition to a combination of classroom lectures and textbook readings. Kalludi, Punja, Pai, and Dhar (2013) conducted a quasi-experimental study involving dental students ($n=80$) that assessed the efficacy of podcasts as a supplement to classroom lectures and textbook readings. The authors reported that the students who had access to the podcasts scored higher on the post-test than the students who did not receive the podcasts until after the exam ($p=0.00$). A randomized controlled trial published by Morris (2015) assessed how podcasts and mobile self-assessments affected learning in two groups of healthcare students ($n=85$) by describing that supplementary podcasts and mobile assessments positively affected the learners ($p\leq 0.05$).

It is valuable to include a review of the theme of user satisfaction of podcasts in conjunction with traditional learning methods. The learners in Kalludi et al. (2013) felt very strongly (91%) that the biggest advantage of podcasts was the ability to listen to them repeatedly, a common theme that has been discussed in this review. In a survey provided to the students in Morris's study, 86% felt strongly that having podcasts as a supplement to traditional learning methods enriched their learning.

Alternative Podcast Implementations

Two publications, both quasi-experimental studies, will be discussed for their unique attributes. In a one-arm, quasi-experimental study published by Miesner, Lyons, and McLoughlin (2017), medical residents ($n=23$) took pre-tests, listened to the educational podcasts, and then took post-tests which yielded a significant improvement in test scores ($p=0.001$). Lien, Chin, Helman, and Chan (2018) compared two groups of medical students ($n=61$), one who

learned by using podcasts and the other who used blog posts, finding that knowledge was increased with both the podcast ($p<0.01$) and blog post learning ($p<0.01$), but no significant difference existed between the two ($p>0.05$).

Satisfaction among learners in these alternative forms of educational podcast implementation is a key point to consider in this review, especially related to the recency of these two studies. In Lien et al. (2018) “students liked that the podcast “taught us how to approach a clinical presentation and walked us through steps for differential and management”, “was easy to listen to and kept a constant volume level”, and “was good for consolidating information (p. 7).” In the post-assessment survey done in the study by Miesner et al. (2017), no evaluation of satisfaction was performed, however students provided unanimously positive comments about the podcast. Another theme that is helpful to analyze is that of the activity of students while they listen to podcasts. In Lien et al. (2018) 79% ($n=22/28$) of the students in the podcast arm of the study took part in different activities such as working out, driving, and eating while simultaneously listening to the podcasts. This is an interesting finding, as learning while multitasking can be perceived as an advantage to educational podcasts. The literature supports the efficacy and satisfaction of educational podcasts, in addition to highlighting the lack of available research that exists regarding educational podcasts geared toward anesthesia education.

Practice Gap Analysis

The literature review established that podcasts can be a useful adjunct in education, however, research does not exist to support the satisfaction of an educational podcast created for SRNAs. While Andrejco et al. (2017) set the foundation for the creation and implementation of educational anesthesia podcasts, research was not conducted to measure the effects of the

podcast. This gap presented an opportunity to create educational podcasts for SRNAs and then measure their satisfaction after the intervention was implemented.

Conceptual Framework

The Keller Attention, Relevance, Confidence, and Satisfaction (ARCS) Model of Instructional Design was the framework chosen to guide the process of creating podcasts as a learning adjunct in nurse anesthesia education. The ARCS Model of Instructional Design is a method that was developed by John Keller in order to enhance the motivational interest of educational resources (Keller, 1987). While the model is made up of three different components, only the first component that involves four conceptual conditions to distinguish learners' motivation will be used as a framework in this translational research. The four conceptual conditions, including *attention*, *relevance*, *confidence*, and *satisfaction*, must be achieved in order to create and sustain motivation in the learner (Keller, 1987). The first condition suggests using methods to capture users' *attention* including active participation, variability, humor, incongruity, specific examples, and inquiry (Keller, 1987). Using anecdotes, different styles of presentation, and allowing the learner to choose the educational topics are all ways to garner and hold *attention* (Keller, 1987). *Relevance* is a condition used to motivate the learner by presenting the material in a way that the learner can connect to personal experiences and encourages them to relate the material to future applicability (Huang, Huang, Diefes-Dux, & Imbrie, 2006). Some strategies to promote relevance include using examples of previous experiences, relating instruction to future usefulness, giving learners choices, using modeling and need matching, and relating the instruction to the worth of future goals (Keller, 1987). The third condition of *confidence* pertains to the learners perceived ability to be successful with the learning task (Huang et al., 2006). Factors that can increase *confidence* include providing the learner with

goals and expectations, ensuring they understand performance requirements and evaluation criteria, giving them encouragement and support, and attributing success to effort (Keller, 1987). Lastly, *satisfaction* is based on the learner's perceived sense of achievement and utility, as well as using the newly acquired knowledge and positive feedback as reinforcements for motivation (Huang et al., 2006). Some strategies of *satisfaction* include natural consequences of learning, receiving unexpected rewards, giving verbal praise, scheduling reinforcement, and avoiding negative threats or influences during learning (Keller, 1987). Together, these four conditions create a foundation for successful learning motivation.

The ARCS Model was selected because it was presented in Andrejco et al. (2017) as a guide for nurse anesthesia educators to create educational podcasts. According to Andrejco et al. (2017), "the use of the Keller ARCS Model and the logic model outlined in this article provide a guide for nurse anesthesia educators who wish to develop effective educational podcasts for the field of nurse anesthesia (p. 17)." Andrejco et al. researched, outlined, and established a podcast for the anesthesia community, in addition to publishing a blueprint for the re-creation and further development of educational anesthesia podcasts in the future (2017). The ARCS Model guided the work of Andrejco and colleagues in their development of podcasts for the nurse anesthesia community.

Goals and Objectives

The significance of creating educational anesthesia podcasts for SRNAs is to provide them with flexibility and engagement in alternative forms of studying. The goal of this project is to explore whether educational anesthesia podcast content provides an alternative medium in a way that will give SRNAs variety in their study plans and enrich the traditional study methods they are using already.

The overall purpose of this project is to determine the level of satisfaction that SRNAs have toward educational podcasts as a supplement to their traditional education. In a more detailed perspective, the four aims of this DNP project are: (1) to record and disseminate a series of educational podcasts that are interesting and helpful to SRNAs, (2) to motivate SRNAs to seek out and utilize alternative, relevant forms of education that are available to reinforce previously learned topics, (3) to give SRNAs confidence in their knowledge by supporting their learning with anesthesia-based educational podcasts, and finally (4) to measure the levels of satisfaction that SRNAs have toward the podcasts.

Project Design

Method for Translation

The ARCS Model of Instructional Design guided the project plan to create educational podcasts for SRNAs. In accordance with the conceptual components of the ARCS model, podcast creation was guided utilizing attention, relevance, confidence, and satisfaction strategies. The condition of *attention* was the basis for podcast production. Creating a learning tool that provided variability to the learning environment by reinforcing familiar concepts through a podcast platform that offers flexibility to the learner's study plan is the foundation of the project (Keller, 1987). Other methods such as active participation through role play, personal stories, and access to references were used to capture listeners attention and participation (Keller, 1987).

The *relevance* of anesthesia topics for the SRNA participants is extremely important to the study's design as the podcasts' topics were chosen to appeal to those interested in introductory anesthesia content. The material presented can assist the study participants in future exams, clinical experiences, and professional endeavors, making them very pertinent to a student. The information produced in the podcast consisted of foundational anesthesia content,

along with relevant personal experiences and practice recommendations. In addition, Andrejco et. al. (2017) explains that relevance is not only related to the content material but how it is presented, showcasing that podcasts are delivered in a relevant and accessible manner for SRNAs.

The condition of *confidence* was incorporated by allowing the study participants to control their own learning through the podcasts. Motivation can be increased by allowing the study participant control over which podcast(s) and how much of the podcast(s) they listened to, that way success is a direct result of the effort that was put in (Keller, 1987). Andrejco et. al. (2017) also suggests that confidence is related to the validity of the podcasts, which can be accomplished through providing show notes with references as an aide to the discussion. Also, podcasts can provide a low-risk learning environment of the listeners choosing, which can enhance confidence (Andrejco et al., 2017).

Lastly *satisfaction* was addressed by providing a post-intervention survey to study participants, evaluating their perceived satisfaction with the podcasts. Satisfaction may be based on personal achievement and mastery of the content presented or can stem from feedback and reinforcement (Keller, 1987). The study participants' satisfaction may continue to evolve as the learner attempts to use the newly acquired knowledge on exams or in clinical practice.

Stakeholder Assessment

The SRNAs at Marian University in the class of 2020 and class of 2021 are the key stakeholders in this project. Their interest in the project stems from their desire to expand and reinforce their foundational anesthesia knowledge for the purposes of improved test scores and clinical skills and knowledge. The implementation and evaluation of the intervention is dependent on other stakeholders as well. Drs. Alarcón, Bendayan, and Blanca are additional

stakeholders as their validated tool, Student Satisfaction with Educational Podcasts Questionnaire (SSEPQ) (Appendix A), is being used to evaluate the satisfaction of the podcasts in this translational research project (Alarcón, Bendayan, & Blanca, 2017). Lastly, Jon Lowrance, MSN, CRNA has provided his podcast platform, *From the Head of the Bed*, as a repository for the podcast series, and therefore is another stakeholder in this project.

Procedure for Implementation

After reading the article “Social Media in Nurse Anesthesia: A Model of Reproducible Educational Podcasts,” and listening to several podcasts on the show, *From the Head of the Bed*, contributing author and producer, Jon Lowrance, MSN, CRNA was contacted for advice on podcast production (Andrejco et al., 2017). Lowrance obtained his Master of Science in Nursing after attending the nurse anesthesia program at Western Carolina University (Lowrance, 2019). He is a current practicing CRNA of four years in Portland, Maine as well as a faculty member with Landmark Learning, Cornerstone Anesthesia Conferences, and National Outdoor Leadership School (NOLS) Wilderness Medicine. Lowrance and three other CRNAs created *From the Head of the Bed* as a research project while in nurse anesthesia school. He has since continued the free, open access podcast channel independently and continues to update and create additional episodes which are accessible on Apple, Android, Spotify, and RSS (Lowrance, 2019). Mr. Lowrance generously contributed to this project by voluntarily offering his podcast platform to host the series of educational podcasts, in addition to editing the scripts and recording and editing the podcasts.

Focusing on foundational anesthesia content applicable to SRNAs, it was decided that a series of six podcasts would be created. The six podcast episodes included: “Clinical Flow: from OR set up through intubation,” “The Anesthesia Machine,” “Pharmacokinetics of Volatile

Anesthetics,” “Pharmacodynamics of Volatile Anesthetics,” “IV Induction Agents,” and “Local Anesthetics.” The process of creating the podcasts began with writing scripts using several common anesthesia textbooks as a reference. All scripts were then reviewed by Lowrance and any necessary edits were made to ensure clarity and accuracy. The podcasts were recorded using Facetime Audio on Apple devices. Lowrance used his own recording equipment to capture the audio and used editing software to make necessary adjustments to the recordings. References to the concepts discussed were provided in the show notes which can be accessed on fromtheheadofthebed.com.

A post-intervention satisfaction survey (Appendix B) was created using Qualtrics Survey Software. The survey included a required consent agreement in order to gain access, which was listed as question 1, but has been left out of Appendix B at this time. Demographic information was collected in the survey in addition to using the SSEPQ validated tool (Appendix A) in order to measure satisfaction (Alarcón et al., 2017).

Once produced, an email was sent to all Marian University SRNAs in classes 2020 and 2021, requesting their participation in this study, along with instructions on how to access the podcasts and post-intervention survey. In addition, some of the members of the class of 2020 and 2021 were visited in person to introduce the study and to answer any questions if needed. Lowrance released all six podcasts on his platform, making them available to the public at the same time the instructions were given. While the podcasts are accessible for free to the public, only the Marian University SRNAs were provided with instructions on how to access the post-intervention survey. After the podcasts and survey were released, the SRNAs were given 45 days to listen to any or all of the podcast series and submit their satisfaction surveys.

Setting

The setting of the podcast series is complex, as it exists in a virtual medium. As stated, the podcasts were made available on Apple, Android, Spotify, and RSS under the *From the Head of the Bed* platform. Due to the virtual nature of the podcasts, there is little ability to control the setting. Control cannot be exercised in regard to when the podcasts are listened to, where they are listened to, how much of the podcast is listened to, which episodes are listened to, and how the podcasts are listened to. The setting is primarily determined by the study participants. Podcasts could have been listened to on a phone, tablet, or computer and with or without headphones. A podcast episode also could have been listened to in one setting or split up over time. The setting of where the podcasts were listened to could vary, including the gym, car, while doing chores, while sitting down at home, and so on. The survey inquired about the setting in which the participants listened to the podcasts. A participant could have listened to one podcast episode, multiple episodes, or none at all before completing the survey. The only control is where, electronically, the podcasts and survey are accessed, as well as the time frame of 45 days that the participants had to listen to the podcasts and take the survey.

Participants

The study participants included Marian University SRNAs in the classes of 2020 and 2021. These participants were chosen based on their presence in the nurse anesthesia program at Marian University. Only SRNAs from Marian University were selected as participants in order to maintain control over who had access to the post-intervention satisfaction survey. The class of 2020 consisted of 12 SRNAs entering their third year of the program and the class of 2021 consisted of 21 SRNAs entering their second year of the program. Participants were recruited through an email detailing the study, along with instructions on how to access the podcast series

and the post-intervention satisfaction survey. In addition, several members of both classes were visited in person during a school meeting to promote participation in the study, as well as to answer any questions. Participants were not offered any reward or compensation for participation in this study.

Perceived Barriers

Perceived barriers associated with this study include time commitment, technology, and motivation. The podcast episodes ranged from 28 to 55 minutes. A study conducted with anesthesia residents measuring podcast use and content, found that the preferred length of podcasts was less than 30 minutes, and a podcast was less likely to be listened to if it exceeded 45 minutes (Matava, Rosen, Siu, & Bould, 2013). Therefore, the increased length of five out of the six podcasts is a barrier to getting listeners to stay engaged through the entire episode. The series of six podcasts totaling 260 minutes and 44 seconds, is an extensive time commitment for SRNA students. However, it is anticipated that a desire to acquire educational anesthesia content in a non-traditional format will be embraced by the study participants. Technology is also a barrier due to predicted differences in experience with podcasts in regard to accessing the platform and either downloading or streaming the content. Access to technology required to listen to podcasts is not barrier, as all students in the nurse anesthesia program at Marian University are provided with an iPad at the start of the program. Lastly, motivation is the most significant perceived barrier, because this study relies heavily on intrinsic motivation from the participants and is not within the control of the study design.

Methods

Instrument

The SSEPQ tool (Appendix A) addressed satisfaction related to the podcast series through a 10-question Likert-type scale with four response options (Alarcón et al., 2017). Based on the SSEPQ, satisfaction is measured in relation to perceived content adequacy, ease of use, and usefulness and benefits. This tool was developed by Alarcón, Bendayan, and Blanca (2017) in order to create a brief and simple questionnaire evaluating satisfaction with educational podcasts in higher education and has standardization data. The creators of the tool are considered to be experts, as they all are doctoral recipients and have experience with teaching or supporting teaching in undergraduate research method courses. In order to standardize this tool, 376 students in a psychology course were enrolled in a study and presented with 11 educational podcasts created by the authors of the psychology course. The podcast could be freely accessed throughout the year, and on the last day of the course, the SSEPQ was administered to the students. The SSEPQ tool was standardized using Cronbach's alpha to determine internal consistency and was created with a one-factor structure in order for the total score of the questionnaire to provide an overall index of students' satisfaction with podcasts. The four response options per question pertain to a score of 1-4 resulting in an overall max score of 40 (Alarcón et al., 2017). Permission was obtained via email from Dr. Alarcón to use the SSEPQ tool in this study.

Data Collection Procedure

Based on the Keller ARCS Model of Instructional Design and the condition of *satisfaction*, the data collection involved creating a post-intervention satisfaction survey using the SSEPQ (Appendix A) (Alarcón et al., 2017; Andrejco et al., 2017). Information regarding

how to access the survey and when to take it was included in the email used to recruit participants for the study. While the podcast is on a free, open access platform available to the public, the post-intervention satisfaction survey access was only shared with Marian University SRNAs. It should be noted that this method does not allow the experimenter to control at what point during the 45-day period the participant takes the survey. It is suggested to the study participants that the survey should be completed after the participant has listened to all the podcast episodes that they plan on listening to within the 45-day period. Data collected will then be analyzed and also compared to the results from Alarcón et al. (2017), which was used to validate the SSEPQ tool (Appendix A), in order to evaluate the effectiveness of the study.

Data Analysis

The analysis plan for this study included utilizing descriptive statistics to analyze the data as the sample size was not large enough to warrant parametric analysis. While this study does not lend itself to parametric comparisons, comparisons will be made with the results of Alarcón et al. (2017), which was used to validate the SSEPQ tool. The SSEPQ portion of the survey was scored in the same manner as the SSEPQ tool used in Alarcón et al. (2017). Each item was scored by rating the answers from 1-4: Strongly disagree (1), Disagree (2), Agree (3), and Strongly Agree (4). The average of the responses for each question along with the total mean score was calculated and compared to Alarcón et al. (2017).

Results

The data collected from the post-intervention survey included demographic information and the SSEPQ instrument (Alarcón et al., 2017). The classes of 2020 and 2021 were equally represented with about 50% (n=26) of participants from each class. The majority of the sample ranged from ages 26-35 with only a small percentage age 36 and above. About 50% of the

sample had between 6-10 years of experience as a registered nurse, the remaining sample had anywhere from 3 years to over 21 years of experience. Forty percent of participants stated that they already listened to podcasts 1-2 times per week, with only 8% reporting they never listen to podcasts. The participants were asked which additional educational modalities are mostly beneficial to them besides traditional didactic learning, the three top rated modalities were YouTube/videos online, recorded video lectures, and podcasts, respectively. Of the 6 podcasts that were released for this study, 88% of participants stated they listened to all 6 podcasts and 12% listened to 3 podcasts. The majority stated that they listened to the podcasts while in the car, followed by cooking and cleaning, sitting and listening, other, and exercising. The “other” responses entered included: while getting ready in the morning; giving my child a bath; and mowing the lawn. See Table 1 Participant Characteristics for a complete overview of the sample (Appendix C).

The table below depicts the results from this study (SRNA Results) compared to Alarcón et al. (Standardized Results) utilizing the SSEPQ tool (2017).

Table 2 SSEPQ Mean Comparisons

SSEPQ Question	Standardized Results (mean) n=376	DNP Project Results (mean)	Difference
1. The podcasts are easy to access	3.49	3.71 (n=24)	0.22
2. The podcasts are useful for learning about this subject	3.34	3.88 (n=24)	0.54
3. The podcasts motivate me to learn about this subject	2.84	3.87 (n=23)	1.03
4. The podcasts make it easier to learn about this subject	3.28	3.91 (n=23)	0.63
5. I am satisfied with the podcasts as a learning tool for this subject	3.44	3.87 (n=23)	0.43
6. The podcasts provide clear information about the theoretical content of the topic	3.27	3.78 (n=23)	0.51
7. The podcasts provide clear information about the practical content of the topic	3.16	3.91 (n=23)	0.75
8. The content of the podcasts is well organized	3.18	3.96 (n=23)	0.78

SSEPQ Question	Standardized Results (mean) n=376	DNP Project Results (mean)	Difference
9. The information contained in the podcasts is academically rigorous	3.03	3.74 (n=23)	0.71
10. The design of the podcasts makes them appealing	2.85	3.87 (n=23)	1.02

Discussion

Overall, the results depict a general satisfaction with the podcast series created. Compared to Alarcón et al. (2017), all of the results from the SSEPQ scored higher, with the greatest difference being that the podcasts motivated the SRNAs to learn about the subject and that the design of the podcasts makes them appealing. The increase in mean scores could be due to multiple factors, the most prevalent being Alarcón et al. (2017) had a sample size of 376, while the sample size for this study was 26. It should be noted that while 26 participants began the survey, only 23 participants fully completed the survey. The higher incidence of satisfaction could also be attributed to Marian University SRNAs' bias toward classmates research. The creators of the study are a part of the class of 2020 and this project was created as a Doctor of Nursing Practice (DNP) research project. The participants could have reported overall better scores as a way to support their classmates.

The higher satisfaction scores could also be attributed to motivation. SRNAs at Marian University, and across the country, undergo a rigorous graduate program that requires balance between didactic and clinical education. The goal upon graduation is to pass a standardized board exam in order to obtain a Certified Registered Nurse Anesthetist license. The stress of the program coupled with limited spare time forces students to seek out additional educational resources. This podcast series was created to directly appeal to SRNAs seeking out foundational anesthesia concepts.

Due to the study design, a relationship cannot be inferred from any of the demographic information collected and the SSEPQ instrument (Alarcón et al., 2017). It would be interesting to know whether age, familiarity with podcasts, or matriculation in the program had any correlation to satisfaction with the podcasts.

Ethical Considerations

The Marian University's Institutional Review Board determined the project was exempt from the need of human subjects' protections; therefore, the project was approved by the Leighton School of Nursing.

Conclusion

Demanding schedules along with intense workloads create a conundrum for SRNAs who have to balance their time between didactic and clinical obligations. Educational podcasts solve a problem for SRNAs in which they can add more studying into their busy schedules without sacrificing time needed for the responsibilities of daily life. There is an evident lack of modern supplemental educational modalities related to anesthesia, including podcasts aimed towards SRNAs. The purpose of this project was to address this void and develop, produce, and measure the satisfaction of educational podcasts created for SRNAs. The study revealed that SRNAs at Marian University were satisfied with the podcast series created and believed that the podcasts made it easier for them to learn about the subject, motivated them to learn, and were a useful for anesthesia education. As educational approaches continue to evolve, it is likely the popularity of podcasts as an additional study modality will become more widely accepted and utilized in anesthesia education.

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Appendix A

Student Satisfaction with Educational Podcasts Questionnaire (SSEPQ) (Alarcón et al., 2017)

ITEMS	Strongly disagree	Dis-agree	Agree	Strongly agree
1. The podcasts are easy to access <i>Los podcasts resultan fáciles de consultar</i>				
2. The podcasts are useful for learning about this subject <i>Los podcasts son útiles para el aprendizaje de esta asignatura</i>				
3. The podcasts motivate me to learn about this subject <i>Los podcasts me motivan para aprender esta asignatura</i>				
4. The podcasts make it easier to learn about this subject <i>Los podcasts facilitan el aprendizaje de esta asignatura</i>				
5. I am satisfied with the podcasts as a learning tool for this subject <i>Estoy satisfecho con los podcasts como recurso de aprendizaje para esta asignatura</i>				
6. The podcasts provide clear information about the theoretical content of the topic <i>Los podcasts muestran información clara sobre los contenidos teóricos del tema</i>				
7. The podcasts provide clear information about the practical content of the topic <i>Los podcasts muestran información clara sobre los contenidos prácticos del tema</i>				
8. The content of the podcasts is well organized <i>El contenido de los podcasts está correctamente estructurado</i>				
9. The information contained in the podcasts is academically rigorous <i>Los podcasts contienen información rigurosa desde el punto de vista académico</i>				
10. The design of the podcasts makes them appealing <i>El diseño de los podcasts es atractivo</i>				

Appendix B

Podcasts as a Learning Adjunct in Nurse Anesthesia Education – Satisfaction Survey

Q1 Consent (Details omitted)

Q2 Please select the year of your expected graduation date from Marian University's nurse anesthesia program

☐ 2020 (1)☐ 2021 (2)

Q3 Please select the age range you fit into

☐ 20-25 years old (1)☐ 26-30 years old (2)☐ 31-35 years old (3)☐ 36-40 years old (4)☐ 41-45 years old (5)☐ 46-50 years old (6)☐ 51+ years old (7)

Q4 Please select your gender

- ☐ Male (1)
 - ☐ Female (2)
 - ☐ Neither (3)
 - ☐ Combo of male and female (4)
 - ☐ Prefer not to answer (5)
-

Q5 Please select the number of years you've been a registered nurse

- ☐ 1-2 years (1)
 - ☐ 3-5 years (2)
 - ☐ 6-10 years (3)
 - ☐ 11-15 years (4)
 - ☐ 16-20 years (5)
 - ☐ 21 + years (6)
-

Q6 How often do you listen to podcasts?

- ☐ Never (1)
- ☐ Rarely (less than 1-2 times per month) (2)
- ☐ Sometimes (1-2 times per month) (3)
- ☐ Regularly (1-2 times per week) (4)
- ☐ Daily (1 or more per day) (5)

Q7 Outside of traditional didactic learning, which additional educational modalities are most beneficial to you? (Select all that apply)

- ☐ Recorded video lectures (1)
 - ☐ YouTube/videos online (2)
 - ☐ Podcasts (3)
 - ☐ Textbooks (4)
 - ☐ Slide presentation notes (5)
 - ☐ Other (Please specify) (6) _____
 - ☐ None (7)
-

Q8 How many podcasts did you listen to out of the 6 total that were recorded with Ashley Scheil and Skyler Rouhselang on *From the Head of the Bed*?

- ☐ 0 (1)
 - ☐ 1 (2)
 - ☐ 2 (3)
 - ☐ 3 (4)
 - ☐ 4 (5)
 - ☐ 5 (6)
 - ☐ 6 (7)
-

Q9 Please select the podcasts that you listened to

- ☐ #44 Clinical Flow: From OR Set Up Through Intubation – Ashley Scheil (1)
 - ☐ #45 The Anesthesia Machine – Ashley Scheil (2)
 - ☐ #46 Pharmacokinetics of Volatile Anesthetics – Skyler Rouhselang (3)
 - ☐ #47 Pharmacodynamics of Volatile Anesthetics – Skyler Rouhselang (4)
 - ☐ #48 IV Induction Agents – Ashley Scheil (5)
 - ☐ #49 Local Anesthetics – Skyler Rouhselang (6)
 - ☐ None (7)
-

Q10 How did you listen to the podcasts? (Select all that apply)

- ☐ While driving/In the car (1)
 - ☐ While cooking or cleaning (2)
 - ☐ While exercising (3)
 - ☐ While sitting and focusing solely on the podcasts (4)
 - ☐ Other (Please specify) (5) _____
 - ☐ Did not listen to any podcasts (6)
-

Q11 The podcasts are easy to access

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q12 The podcasts are useful for learning about this subject

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q13 The podcasts motivate me to learn about this subject

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q14 The podcasts make it easier to learn about this subject

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q15 I am satisfied with the podcasts as a learning tool for this subject

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q16 The podcasts provide clear information about the theoretical content of the topic

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q17 The podcasts provide clear information about the practical content of the topic

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q18 The content of the podcasts is well organized

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q19 The information contained in the podcasts is academically rigorous

- ☐ Strongly agree (1)
 - ☐ Agree (2)
 - ☐ Disagree (3)
 - ☐ Strongly disagree (4)
-

Q20 The design of the podcasts makes them appealing

- ☐ Strongly agree (1)
- ☐ Agree (2)
- ☐ Disagree (3)
- ☐ Strongly disagree (4)

End of Block: Consent

Appendix C

Table 1 Participant Characteristics

<i>DNP Participant Characteristics</i>	<i>Frequency (n)</i>
Expected Graduation Date n=26	
2020	12 (46%)
2021	14 (54%)
Age n=26	
26-30	16 (61%)
31-35	6 (23%)
36-40	1 (4%)
41-45	2 (8%)
45-50	0
51+	1 (4%)
Gender n=25	
Male	5 (20%)
Female	19 (76%)
Prefer not to answer	1 (4%)
Years as an RN n=25	
3-5 years	9 (36%)
6-10 years	12 (48%)
11-15 years	1 (4%)
16-20 years	2 (8%)
21+ years	1 (4%)
How often do you listen to podcasts? n=25	
Never	2 (8%)
Rarely (less than 1-2 times per month)	5 (20%)
Sometimes (1-2 times per month)	6 (24%)
Regularly (1-2 times per week)	10 (40%)
Daily (1 or more per day)	2 (8%)
Outside of traditional didactic learning, which additional educational modalities are most beneficial to you? n=84	
Recorded video lectures	18 (21%)
YouTube/Videos online	21 (25%)
Podcasts	15 (18%)
Textbooks	14 (17%)
Slide presentation notes	14 (17%)
Other (Hands-on/simulation)	2 (2%)
How many podcasts did you listen to out of the 6 total that were recorded with Ashley Scheil and Skyler Rouhselang on From the Head of the Bed? n=25	
0	0
<i>DNP Participant Characteristics</i>	<i>Frequency (n)</i>

1	0
2	0
3	0
4	3 (12%)
5	0
6	22 (88%)