Implementation of Multimedia Educational Tools to Increase Patient Willingness to Disclose Medical Marijuana Use to Anesthesia Providers Prior to Receiving Anesthesia

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Author Note

This paper is based on data from the DNP Project completed as partial fulfillment of the Doctor of Nursing Practice degree with the guidance and supervision of the following:

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Abstract

In the United States, marijuana is one of the most used drugs providing consumers both recreational and medicinal purposes. Marijuana is legal for medicinal use throughout the majority of the United States, however, negative stigmas still exist. These stigmas discourage users from being honest about their use with their healthcare providers due to fear of the law or fear of judgment. Unfortunately, this lack of honesty and communication can put a patient in unnecessary harm throughout the perioperative period, such as airway or cardiovascular compromise. For this reason, it is crucial an anesthesia provider is made aware of a patient's marijuana use prior to receiving anesthesia. The literature demonstrates that patients are best educated when the information is presented in a multimedia fashion, such as pamphlets or a video. Based on the information presented in the literature, multimedia educational tools were developed illustrating the implications of marijuana use and anesthesia. The multimedia educational tools were disseminated via email to customers of Verilife, a local marijuana dispensary. Using a posttest survey, the data demonstrated that the use of multimedia educational tools do encourage patients to disclose their marijuana use to an anesthesia provider prior to receiving anesthesia.

Keywords: anesthesia, marijuana, education, multimedia tool, medical

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Chapter One: Introduction and Overview of the Problem of Interest

Known as the gateway drug, marijuana is the second most used psychotropic drug in the United States (National Institute on Drug Abuse [NIDA], 2020). More than 94 million people in the United States admit to using marijuana at least once (Foundation for a Drug Free World International, n.d.). In America, marijuana has been used for medicinal purposes since the 19th century and for recreational purposes since the Mexican Revolution in 1910, however, this is also the time marijuana use started to be associated with stigmas and stereotypes (University of Georgia Law School, 2020). In the past, marijuana users have been linked to negative connotations like lazy, irresponsible, "stoners," and "potheads." Although marijuana has been federally prohibited since 1937, state policies began the process of legalizing marijuana and its derivatives in the 1970s (Pacula & Smart, 2017). As of February 2022, 37 states have approved marijuana for medical use and 17 states have approved it for recreational use (National Conference of State Legislatures [NCSL], 2022). Due to the inconsistencies in legality and the stigmas related to marijuana, many patients do not disclose their use to a healthcare provider for fear of judgement or lack of clinician support (Leos-Toro et al., 2018). During the perioperative period, a patient's lack of honesty and communication to their anesthesia provider can increase their risk of avoidable anesthetic complications, such as cardiac arrest, airway compromise, interactions with anesthetic drugs, and inadequate pain control (Horvath et al., 2019).

Background & Significance

In the United States, marijuana is commonly used for recreational or medicinal purposes. 306,291 people have been prescribed a medical marijuana card in the state of Pennsylvania,

however, that number continues to climb daily (Pennsylvania Department of Health [PDOH], 2020). Although marijuana has been prescribed for a variety of chronic conditions, it is still considered a Schedule 1 drug under the Controlled Substance Act (CSA) (United States Drug Enforcement Administration [U.S. DEA], 2021). "Schedule I drugs, substances, or chemicals are defined as drugs with no currently accepted medical use and a high potential for abuse" (U.S. DEA, n.d.). To be prescribed a medical marijuana card in Pennsylvania, a person must be a Pennsylvania resident who suffers from what is considered a serious medical condition (PDOH, 2020). Currently, there are 23 approved serious medical conditions which include but are not limited to: anxiety disorders, cancer, central nerve damage, glaucoma, epilepsy, neuropathies, chronic pain, and amyotrophic lateral sclerosis (ALS) (PDOH, 2020). See Appendix A for a full list of qualifying conditions under Pennsylvania Law. Although controversial, multiple studies have demonstrated therapeutic benefits of marijuana, such as, analgesic, antiemetic, antidepressant, immunosuppressant, and anti-inflammatory properties (Huson et al., 2018).

Marijuana provides users with a multitude of benefits, however, there are THC dose dependent effects that contribute to both excitatory and inhibitory physiologic changes in the central nervous system (CNS), respiratory system, and cardiovascular system (Horvath et al., 2019). The most common feelings associated with marijuana consumption are anxiety relief and euphoria, yet some people may experience panic, dysphoria, and anxiety (Horvath et al., 2019). In addition, people have impaired learning and perception, as well as, decreased pupillary reaction to light (Horvath et al., 2019). In patients who smoke or inhale marijuana, respiratory system changes that occur include increased respiratory secretions, bronchoconstriction, and a hyperreactive airway (Horvath et al., 2019). There is also an association between marijuana inhalation and chronic obstructive pulmonary disease (COPD), lung cancer, and emphysema

(Horvath et al., 2019). Cardiovascular system effects related to marijuana use are reduced cardiac contractility, vasodilation or vasoconstriction, and tachycardia or bradycardia (Horvath et al., 2019). Studies have also demonstrated that marijuana users may experience arrhythmias and have electrocardiogram (EKG) changes, like ST-segment irregularities and reduced P-wave amplitude (Horvath et al., 2019). Other systemic effects of THC dependent doses include dry eyes and mouth, slowed gastric emptying, and coagulation abnormalities (Echeverria-Villalobos et al., 2019; Horvath et al., 2019). These systemic effects put users at risk for anesthetic complications throughout the perioperative period. Prior to surgery, a marijuana user should disclose their consumption to an anesthesia provider so appropriate considerations and alterations can be made throughout the preoperative, intraoperative, and postoperative period.

Preoperative considerations. In order to formulate a patient-specific anesthetic plan, an anesthesia provider should perform a thorough assessment of a patient's medical history. According to Echeverria-Villalobos et al. (2019), if a patient discloses marijuana use, further inquiry should occur about the route of administration, last time of use, frequency of use, and any adverse effects experienced. Any withdrawal symptoms should also be noted, as chronic users may experience withdrawal throughout the surgical procedure (Horvath et al., 2019). Due to the potential EKG changes, patients should also receive preoperative testing that includes an EKG and an echocardiogram (Horvath et al., 2019). Elective surgeries should be avoided for at least 72 hours from last exposure because acute marijuana intoxication poses the highest risk of cardiovascular incidents (Echeverria-Villalobos et al., 2019; Horvath et al., 2019). An anesthesia provider should also consider preoperative laboratory values to confirm a patient's international normalized ratio (INR), prothrombin time (PT), and platelet levels so adequate preparation for increased bleeding risk can be taken with chronic marijuana users (Horvath et al., 2019).

Intraoperative considerations. Several concerns exist throughout the intraoperative period related to marijuana use. Caution should be taken when instrumenting an airway due to the hyperreactivity associated with marijuana users who smoke or vape (Horvath et al., 2019). Patients are at an increased risk of bronchospasm, cough, hypoxia, and lung collapse (Echeverria-Villalobos et al., 2019; Horvath et al., 2019). General anesthesia should be induced with rapid sequence intubation because THC significantly slows gastric emptying leading to an increased aspiration risk (Horvath et al., 2019). Chronic marijuana users often require more induction medications and anesthetic gas to maintain an adequate depth of anesthesia. In a study by Twardowski et al. (2019), marijuana users required 14% more fentanyl, 19.6% more versed, and 220.5% more propofol for the duration of the endoscopic procedure compared to non-marijuana users. Due to the increased cardiac workload and oxygen demand related to marijuana use, patients are at an increased risk for a myocardial infarction while under general anesthesia (Echeverria-Villalobos et al., 2019; Horvath et al., 2019). Marijuana use has been associated with severe cardiovascular complications such as deadly arrhythmias, coronary spasm, stroke, and sudden death (Echeverria-Villalobos et al., 2019).

Postoperative considerations. The most common postoperative concern is adequate pain control. Marijuana provides relief from chronic pain, however, chronic marijuana use has been shown to lower the pain threshold in surgical patients suffering from acute pain, therefore, increasing pain medication requirements (Horvath et al., 2019). Studies have shown the narcotic requirement of a chronic marijuana user to be twice that of a nonuser of the same height and weight over a two-day period (Huson et al., 2019). Another consideration is the potential to experience withdrawal from marijuana during the postoperative period. Many of the

aforementioned perioperative considerations can be avoided and appropriate preparations can be made if a patient is honest about their marijuana use prior to undergoing a procedure.

PICO Question Guiding Inquiry

As more states legalize marijuana for both medicinal and recreational purposes, the number of users is also going to increase. Marijuana users are aware of the daily side effects of marijuana, such as dry mouth, tachycardia, and impaired cognition, but they often are not educated on the implications related to anesthesia (Horvath et al., 2019). It is not uncommon for anesthesia providers to be unaware of a patient's marijuana consumption, including frequency and route of administration, due to a patient's fear of legal issues, fear of stigma, or lack of knowledge on the importance of disclosing use (Boehnke et al., 2021). In an effort to keep a patient safe and to provide the best possible care, an anesthesia provider needs to know about a patient's marijuana use considering its pathophysiological effects and multi-organ side effects throughout the perioperative period (Echeverria-Villalobos et al., 2019). Whether the patient is a chronic user or is acutely intoxicated, an anesthesia provider will need to make appropriate adjustments to their anesthetic plan (Horvath et al., 2019). Based on the previously discussed information, the PICO question driving this project is: "In patients who use medical marijuana, will a multimodal educational tool about the anesthetic implications related to marijuana, increase their willingness to disclose their marijuana use to an anesthesia provider prior to receiving anesthesia?"

System and Population Impact

Given the increasing occurrence and legalization of marijuana use throughout the United States both for medicinal and recreational purposes, it is imperative that consumers are honest about their use with healthcare providers. Anesthesia providers are likely to encounter a patient

with a history of marijuana use, which can influence their perioperative care (Lynn & Galinkin, 2020). The duty of anesthesia provider is not to pass judgement on their patient but rather to provide the most pain free and the safest anesthetic (Hepner, 2020). Patients are more likely to admit use when they learn it might affect their care, therefore, this project aimed at educating marijuana consumers on the anesthetic implications of marijuana use (Saleh, 2020). When an anesthesia provider is aware of a marijuana consumer's history, frequency, and route of marijuana use, the anesthesia provider can adjust their anesthesia plan, prevent complications, and keep the patient as safe as possible (Hepner, 2020).

Purpose and Objectives

The purpose of this project was to utilize multimedia educational tools to inform patients on the anesthetic implications associated with marijuana use. Multimedia educational tools in the form of a clinical-based scenario video and digital handout were made available to participants via Verilife's Medical Marijuana dispensary email list-serve. After viewing the educational materials, participants were prompted to complete a survey that assessed their method of consumption, frequency, if they understood the importance of disclosing their use, and if they were more willing to disclose their medical marijuana use to an anesthesia provider after viewing the multimedia educational tools.

The main objective of this project was to increase patient willingness to report medical marijuana use to an anesthesia provider prior to receiving anesthesia. Another objective was that participants will be able to inform their anesthesia providers of the amount, frequency, and route of medical marijuana consumed utilizing the questionnaire included in the digital handout provided to participants during implementation period. A goal was established to have at least 30 participants view the multimedia educational tools during the one-month implementation period.

In addition, another objective was to have at least 50% of the participants in this project report an increase in willingness of reporting medical marijuana use to an anesthesia provider prior to receiving anesthesia.

Chapter Two: Review of the Evidence/ Literature

Search Methodology

A literature search was performed to locate evidence on methods to best educate marijuana users on the anesthetic implications of marijuana use. The initial search was completed in Google Scholar using the phrase "multimedia patient education tools" and yielded 71,000 results. Then additional electronic databases searched were Cumulative index to Nursing and Allied Health Literature (CINAHL), Ovid, SpringerLink and Pubmed to determine the best patient educational methods. Keywords used in the search included: patient education, understanding, methods, multimodal, video, pamphlet, marijuana, and anesthesia. Boolean operators, AND and OR, were used to focus the search and to connect various pieces of information to find articles to help answer the PICO question. The search was restricted to articles published from 2011 to 2021 to limit the literature search to more current data. Inclusion criteria were randomized controlled trials, systematic reviews, quasi-experimental studies, and articles written in English. In addition, studies of varying populations were included to determine the best education methods. Exclusion criteria were editorials, dissertations, and continuing education. A total of 1,651 articles were populated based off the keywords listed and restrictions utilized. Each abstract was read and after thorough review of the articles, five articles were chosen to answer the PICO question.

Findings

The chosen studies focused on the use of multimedia tools, like videos or interactive modules, for patient education compared to conventional educational methods, like verbal teaching. Of the articles chosen, four articles were randomized controlled trials (Chotiyarnwong et al., 2020; Greene et al., 2017; Ozkan & Findik, 2020; Siu et al., 2016) and one was a

systematic review (Friedman et al., 2011). With regard to traditional education approaches, Friedman et al. (2011) discovered verbal teachings and discussions were the least effective methods and should not be used as the sole method of patient education. Friedman et al. (2011) discovered videotapes, audiotapes, and pamphlets had a positive impact on patient knowledge and satisfaction, compared to verbal teaching. Similar to these findings, Siu et al. (2016) found that patients had significant increase in recall of information when presented as a multimedia module versus a verbal discussion. According to Siu et al. (2016), when patients better recall information, they are more satisfied with the presented education, and therefore better understand the risks of their surgical procedure. Looking at a different multimedia approach, an educational booklet, Ozkan and Findik (2020) discovered patients were better prepared for a procedure and had decreased levels of anxiety prior to a procedure when they were preoperatively presented with the information in written form.

In contrast, Greene et al. (2017) did not find a correlation in patient preparedness for surgery and the use of an educational video. Rather, the study found an association between perceived preparedness for surgery and perception of time spent with the healthcare provider (Greene et al., 2017). Chotiyarnwong et al. (2020) did not find a significant difference between video-based teaching methods and traditional based teaching methods with regard to patient satisfaction and knowledge. Since there was no significant difference, Chotiyarnwong et al. (2020) suggested video-based education can replace the traditional education approach or suggested they be concomitantly used.

Limitations

Limitations exist for this literature search. One limitation noted was four of the studies were confined to a single institution, therefore, results may not be generalizable to different

institutions (Chotiyarnwong et al., 2020; Greene et al., 2017; Ozkan & Findik, 2020; Siu et al., 2016). Another limitation is the studies were not limited to the United States, but included research from Thailand, Canada, and Turkey. In addition, the study by Greene et al. (2017) utilized fellows to conduct the preoperative educational sessions (Greene et al., 2017). In busier medical settings, it may not be feasible to have fellows perform the educational sessions at designated preoperative visit, therefore, an educational video may be more beneficial to address routine preoperative counseling so the physician can focus on patient concerns (Greene et al., 2017). Lastly, the articles selected were not directly related to either marijuana or anesthesia education during the preoperative period.

Conclusions

The use of multimedia educational tools, like a video and a digital handout, is supported by the literature in the studies discussed in the evidence synthesis. The results of the studies demonstrate that when presented preoperatively, video-based learning and an educational booklet increased patient knowledge and satisfaction, improved recall, and decreased anxiety (Chotiyarnwong et al., 2020; Friedman et al., 2011; Greene et al., 2017; Ozkan & Findik, 2020; Siu et al., 2016). The negative stigma surrounding marijuana frightens patients from being honest about their use during their preoperative anesthesia interview (Horvath et al., 2019). This lack of communication creates an opportunity for potential, avoidable anesthesia complications to occur. Based on this evidence, an educational video and digital handout regarding the anesthetic implications related to marijuana use were developed and implemented for medical marijuana users and their willingness to disclose their use to an anesthesia provider prior to surgery was evaluated.

Chapter Three: Theoretical Framework

The theoretical framework chosen for this project is the RE-AIM framework, see Appendix B. The RE-AIM framework was conceptualized over 20 years ago as a result that the translation of scientific developments into practice were often time-consuming and unfair (Glasgow et al., 2019). This framework is most often applied within behavioral health and public health research across a variety of health conditions, settings, and populations (Glasgow et al., 2019). The acronym RE-AIM stands for the five components of the framework: Reach, Efficacy or Effectiveness, Adoption, Implementation, and Maintenance (Harden et al., 2018). The RE-AIM framework is an adaptable framework that can be utilized by practitioners in various settings, populations, topics, and interventions (Harden et al., 2018).

Reach

The target population was patients in Pennsylvania who hold a medical marijuana card and are customers of Verilife, a medical marijuana dispensary that operates under the parent company PharmaCann. To reach the target population, an email was sent to participants through the Verilife customer email list-serve. The email included access to the multimedia educational tools, a video and digital handout, as well as, the survey. Distributing the educational materials via email improved Reach because the information was delivered to the clients rather than the clients having to go somewhere to receive the information (RE-AIM, n.d.).

Efficacy or Effectiveness

Effectiveness measures the impact of the proposed intervention (RE-AIM, n.d.). The effectiveness of the project was assessed via an anonymous short survey. Access to this survey was included in the same email as the multimedia educational tools. After the survey was completed, Verilife removed any patient identifiers, such as email or name, and distributed the

results to the DNP students for further analysis. All data collected was organized and analyzed using Microsoft Excel.

Adoption

Throughout the adoption component of the RE-AIM framework, the writer gained support from stakeholders and developed a relationship with Verilife to gain organizational support (Harden et al., 2018). The first step was contacting Verilife and explaining the project to determine if the dispensary was even interested. Once buy in was established, the DNP students virtually met with the clinical services manager (CSM), Kevin Harbison, to further explain the project and determine how it could be executed at Verilife. The CSM was included throughout the developmental stages of the project and was provided the survey, the multimedia educational tool, and the project timeline prior to implementation of the project. Working together with the DNP students, the CSM helped determine strategies that would assist in overcoming potential barriers to project adoption and implementation.

Implementation

The project implementation will be further discussed in detail in the project design section, but the implementation was carried out through the development and distribution of the clinical based scenario video and the digital handout. The DNP students created a clinical scenario video depicting a patient who underwent surgery and was not honest about their marijuana consumption and the complications that resulted. The digital handout included the information presented in the video but in a written format so participants had easy access to the information. Both the video and digital handout were sent to Verilife's CSM and they distributed the multimedia educational tools to the participants via the email list-serve.

Maintenance

The maintenance component of the RE-AIM framework is the extent to which the project becomes a part of the routine organizational practices of Verilife and the individual level (RE-AIM, n.d.). This was accomplished by providing Verilife with access to the multimedia educational tools so they could be distributed to future customers after this project was completed. In addition, participants at the time of the project will have access to the multimedia educational tools for future reference. Since the information provided in this project is beneficial to their clients, the CSM also expressed great excitement about this project and hopes to continue a relationship with Cedar Crest College to allow for future DNP projects at Verilife. In addition, there may be future opportunities to expand the educational tools provided in this project to other Verilife dispensaries throughout the United States to increase awareness of the anesthetic implications of marijuana.

Chapter Four: Project Design

Institutional Review Board (IRB) Approval

Prior to initiation of this DNP Project, Cedar Crest College (CCC) IRB approval (Appendix C) was obtained on December 1, 2021. In addition, informed consent and a research description supplement were approved by the IRB committee and were distributed to participants along with the multimedia educational tools. Participant confidentiality was protected through Verilife with the removal of any patient identifiers from the post survey prior to forwarding the results to the DNP students. There is no risk for patient harm associated with this project and participation in the project was voluntary.

Implementation Plan

To implement this project within a Pennsylvania medical marijuana dispensary, the DNP students had to gain approval from key stakeholders at a local dispensary. Verilife's CSM and administrative personnel from PharmaCann, Verilife's parent company, were contacted to hold a meeting to discuss this DNP project. The original plan was to present the educational materials in person at one of Verilife's Pennsylvania locations, however, The Pennsylvania Department of Health does not allow individuals without a Pennsylvania medical marijuana card or those who are not employees access into the dispensary. For this reason and considering COVID-19 restrictions, any in-person educational opportunities were not an option. After gaining approval from these key stakeholders, the DNP students created two multimedia educational tools in the form of a digital handout and a clinical based scenario video. See Appendix D for the approval from Verilife.

The video was presented as a clinical based scenario showing a chronic marijuana user undergoing general surgery and the physiologic changes that occur under anesthesia. In addition,

the video showed the marijuana user experiencing complications related to their marijuana use that could have been avoided if they disclosed their marijuana use prior to undergoing anesthesia. The video stressed the importance of disclosing marijuana use to a healthcare provider, such as anesthetists or a primary care physician, because this information may alter the anesthetic plan or additional preoperative testing may be warranted (Horvath et al., 2019). The digital handout (Appendix E) incorporated the information from the video and was designed so participants can easily access the information at any time. Additionally, the digital handout included a checklist the patient can fill out prior to their procedure. This checklist serves as a tool that the patient can give to their anesthesia provider on the day of their procedure if they are not comfortable verbally discussing their marijuana use.

These multimedia educational tools were distributed to Verilife customers via the Verilife email list-serve along with the post survey. The participants were given one month to view the materials and complete the survey. The CSM removed all participant personal information from the survey responses before making them accessible to the DNP students. The results of the survey were used to assess their willingness to disclose their marijuana use to an anesthesia provider after viewing the multimedia educational tools should they require surgery in the future.

Data Collection Tools

Due to the more current nature of the legalization of marijuana, a validated measurement tool for this project does not exist. Therefore, to assess the effectiveness of the multimedia educational tools related to marijuana use and its anesthetic implications, participants were prompted to complete a survey through Verilife's secure Google Forms Survey account after viewing the educational video and digital handout. The survey (Appendix F) consisted of eight questions developed by the DNP students. The survey responses were anonymous and any

personal identifiers and IP addresses were removed by Verilife's CSM prior to forwarding the responses to the DNP students for data analysis.

Resources Needed

The graduate simulation center at Cedar Crest College was utilized to create the educational video for this project. This simulation center is free to students who attend Cedar Crest College. The simulation center provided all the necessary tools needed to film the clinical based scenario, including the simulated pre-operative holding area and operating room. The video was filmed using the DNP students' mobile phones and was edited using iMovie on their personally owned laptops. In addition, the digital handout was created using Microsoft Word. Utilization of these resources helped streamline the completion of the multimedia educational tools.

Budget Justification

The creation of this DNP project did not pose any financial burden to the DNP students. Also, the implementation of this project did not pose any cost to Verilife as all the multimedia educational tools were electronically distributed via email. The educational video was filmed using personal mobile phones and edited within iMovie creating zero cost to the DNP students. In addition, the resources utilized to film the educational video within Cedar Crest College's graduate simulation center are free to all students in the School of Nursing.

Chapter Five: Implementation Procedures and Processes

Implementation of this DNP project was accomplished by two Cedar Crest College DNP students utilizing multimedia educational tools on the use of medical marijuana and its anesthetic implications. The multimedia educational tools consisted of a digital handout and a clinical based scenario video. The digital handout was created using Microsoft Office 365™ on the DNP students' personal MacBook. The digital handout included anesthesia considerations related to medical marijuana use before, during, and after surgery. In addition, a checklist was incorporated into the handout. Prior to their procedure, patients who use medical marijuana can complete the checklist. This checklist serves as a tool when the patient is not comfortable discussing their medical marijuana use and then they are able to present the checklist to their anesthesia provider. The checklist still allows for patients to disclose their medical marijuana use prior to undergoing anesthesia.

The clinical based scenario video was filmed using the DNP students' iPhones, a tripod, and a MacBook. Before filming the video, the Nursing Simulation Center Manager arranged in scheduling of the high-fidelity simulation center located in the Hamilton Boulevard Building at Cedar Crest College. This is where the clinical based scenario video was filmed and allowed access to the preoperative simulation room, the operating room simulation room, and HAL®, an advanced multipurpose patient simulator. In addition to the two DNP students conducting this project, two additional DNP students volunteered as actresses for the video. After filming was complete, the video was edited within iMovie. The 15-minute video included an introduction, a scenario depicting a patient who did not disclose their marijuana use prior to undergoing anesthesia, a scenario depicting a patient who did disclose their marijuana use prior to

undergoing anesthesia, and a conclusion. Once the multimedia educational tools were completed, they were emailed to Verilife's CSM and the DNP project chairs and mentors for approval.

The population included in this project were individuals in Pennsylvania who hold a legal, medical marijuana card, were older than 18 years, and purchased their medical marijuana products from a Pennsylvania Verilife dispensary. Participants also had to be included on the Verilife email list-serve. The exclusion criteria for this project were designated caregivers, minors, and those without access to email, as that was the method of project implementation.

Due to restrictions imposed by the Pennsylvania Department of Health and to maintain anonymity amongst the participants, the multimedia educational tools were sent to the participants via Verilife's email list serve. The recruitment email contained a brief description of the project, informed consent to participate in the project, instructions to view the multimedia educational tools, a link to the post survey via Google Forms Survey under the Verilife Google account and contact information of the DNP students. Participants were informed that participation was voluntary and anonymous, and they had the right to withdraw their participation at any time. Participants had one month to view the multimedia educational tools and complete the post survey. Data was collected and analyzed using Google Forms Survey and Microsoft Excel. Prior to forwarding the survey results to the DNP students, Verilife's CSM ensured any personal identifiers and IP addresses were removed. Upon completion of the post survey, participants were able to maintain access to the multimedia educational tools for future reference thru their emails.

Chapter Six: Evaluation and Outcomes

The implementation for this project spanned over a one-month period to gather data to answer this project's PICO question. This one-month period allowed Verilife to distribute the multimedia educational tools to its customers via email and it allowed the participants adequate time to view the multimedia educational tools and answer the eight-question survey.

Evaluation

The purpose of data evaluation was to determine whether the participants were more likely to inform their anesthesia provider of their marijuana use prior to receiving anesthesia after viewing the multimedia educational tools. The eight-question survey was completed via Verilife's secure Google Forms Survey account. The survey responses remained anonymous and any personal identifiers and IP addresses were removed by Verilife's CSM prior to forwarding the responses to the DNP students for data analysis. The DNP students transferred the data sent from Verilife into Microsoft Excel for further data analysis. Since participants were only filling a survey out after viewing the multimedia educational tools and the goal was to evaluate the participants' responses to survey questions, descriptive statistics were used to analyze the data. Over the course of the one-month implementation period, a total of 54 participants viewed the multimedia educational tools and answered the survey questions.

Demographics

Three questions included in the survey were participant demographic questions related to gender, age, and which Verilife location they use to purchase their medical marijuana. Of the 54 participants, 24 participants identified as female and 30 participants identified as male. It was also discovered that 25 participants were between the ages of 18-30 years (46%), 15 participants were between the ages of 31-40 years (28%), eight participants were between the ages of 41-50

years (15%), and six participants were greater than 51 years of age (11%) (Figure 1). With regard to which Verilife location participants use to purchase their marijuana, the data revealed eight participants purchase from the Plymouth Meeting location (15%), eight participants purchase from the Chester location (15%), 11 participants purchase from the Lancaster location (20%), eight participants purchase from the Quakertown location (15%), four participants purchase from the Pottstown location (7%), nine participants purchase from the Shamokin location (17%), and six participants purchase from the Williamsport location (11%) (Figure 2).

Figure 1

Ages of Participants in Years

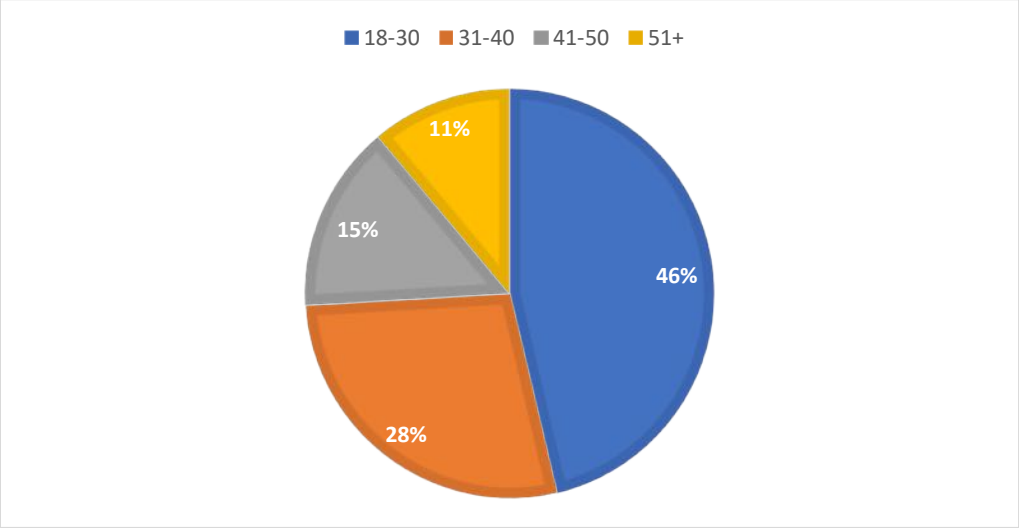
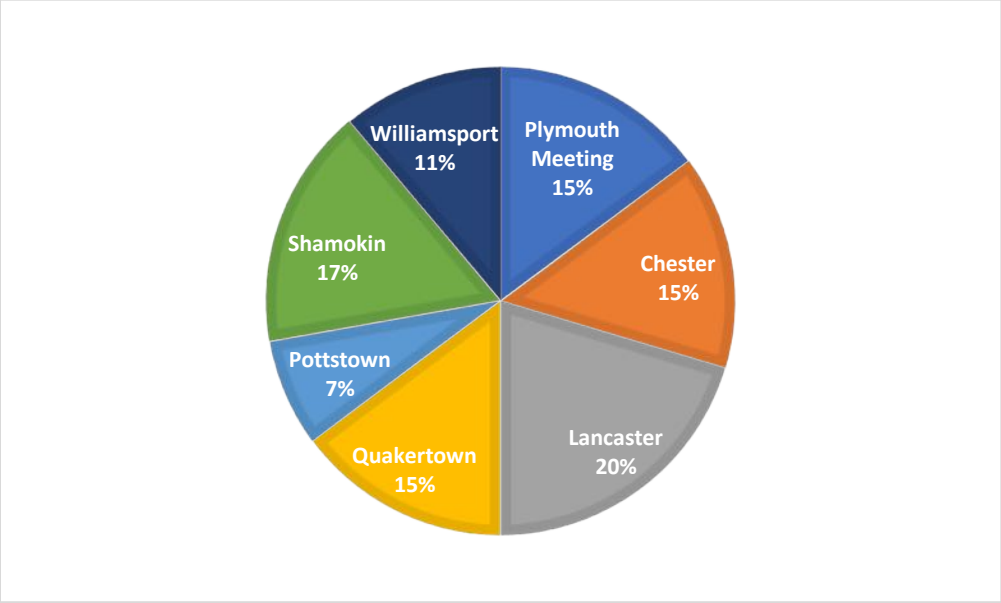


Figure 2

Location Used to Purchase Medical Marijuana

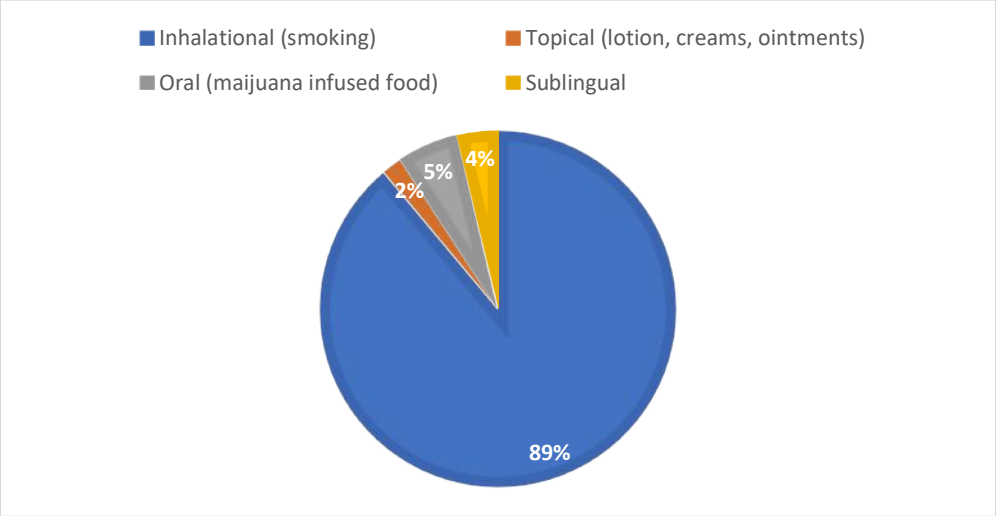


Outcomes

The data analysis indicated the most common preferred method of marijuana consumption was via inhalational methods, such as smoking (89%) (Figure 3). 5% of participants preferred oral methods, like marijuana infused foods, and 4% of participants preferred the sublingual route for marijuana consumption. Only one participant preferred to use marijuana topically, such as in lotions, ointments, or creams.

Figure 3

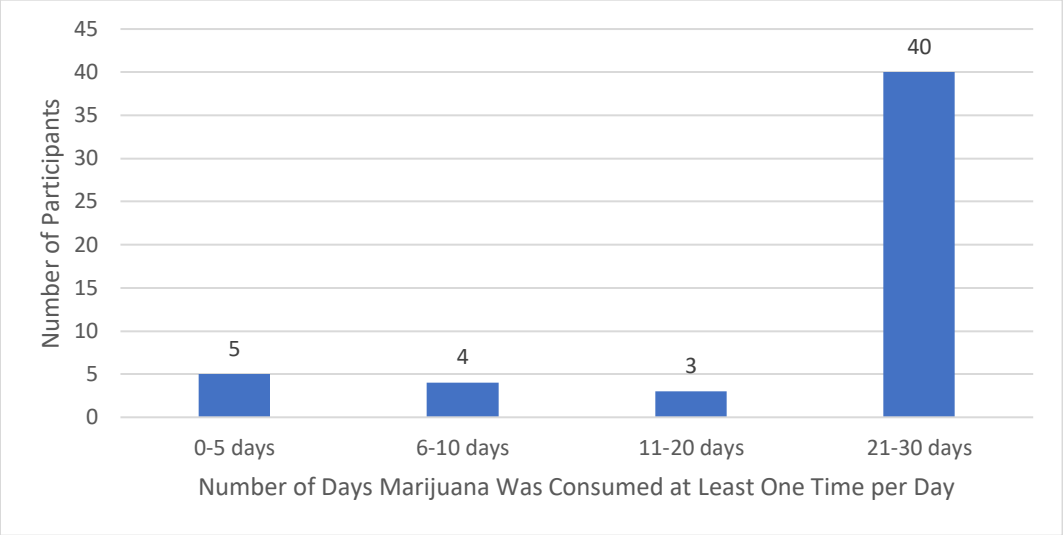
Preferred Method of Marijuana Consumption



The fifth question on the survey inquired about the frequency of marijuana consumption within the last 30 days. Participants were asked how many days in the past 30 days did they consume marijuana at least one time per day. In the past 30 days, five participants consumed marijuana at least once between 0-5 days, four participants consumed marijuana at least once between 6-10 days, three participants consumed marijuana at least once between 11-20 days, and 40 participants consumed marijuana at least once between 21-30 days (Figure 4).

Figure 4

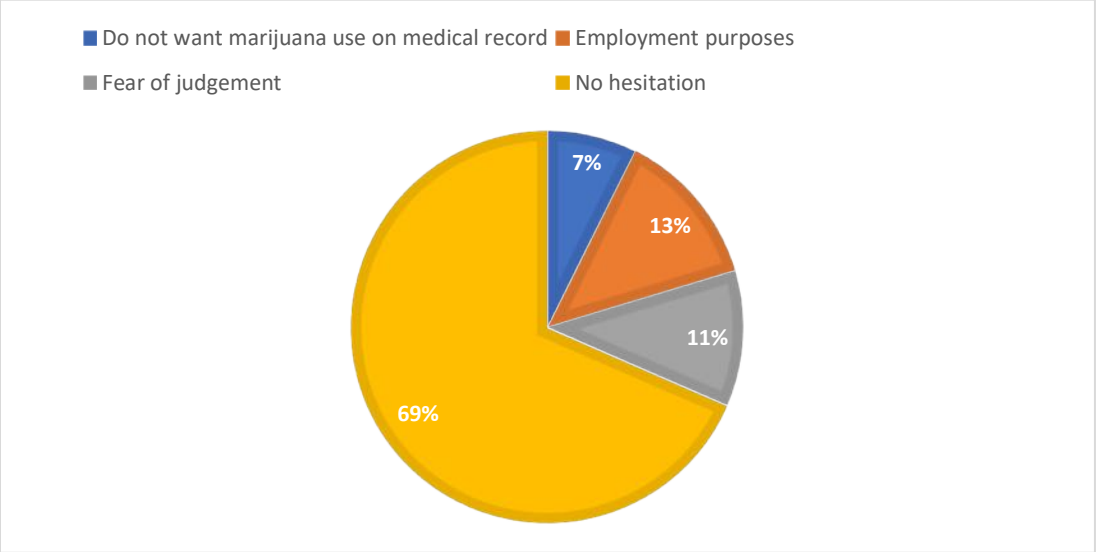
Frequency of Marijuana Consumption



Out of the 54 participants, 37 participants (69%) answered they would not have any hesitation in disclosing their marijuana use to the anesthesia provider prior if they required surgery (Figure 5). In addition, the data indicated four participants (7%) would be hesitant to disclose marijuana use to the anesthesia provider because they did not want their marijuana use noted in their medical record. Also, seven participants (13%) would have hesitation related to employment purposes and six participants (11%) would have hesitation related to fear of judgement.

Figure 5

Reasons for Hesitation in Disclosing Marijuana Use to Anesthesia Provider



After viewing the multimedia educational tools, 94% of participants indicated they had a better understanding of the importance of disclosing their marijuana use with their anesthesia provider prior to receiving anesthesia (Figure 6). The data analysis revealed 96% of participants were more willing to inform an anesthesia provider of marijuana use if they required surgery after viewing the multimedia educational tools (Figure 7).

Figure 6

Understanding of the importance of disclosing use to your anesthesia provider(s)

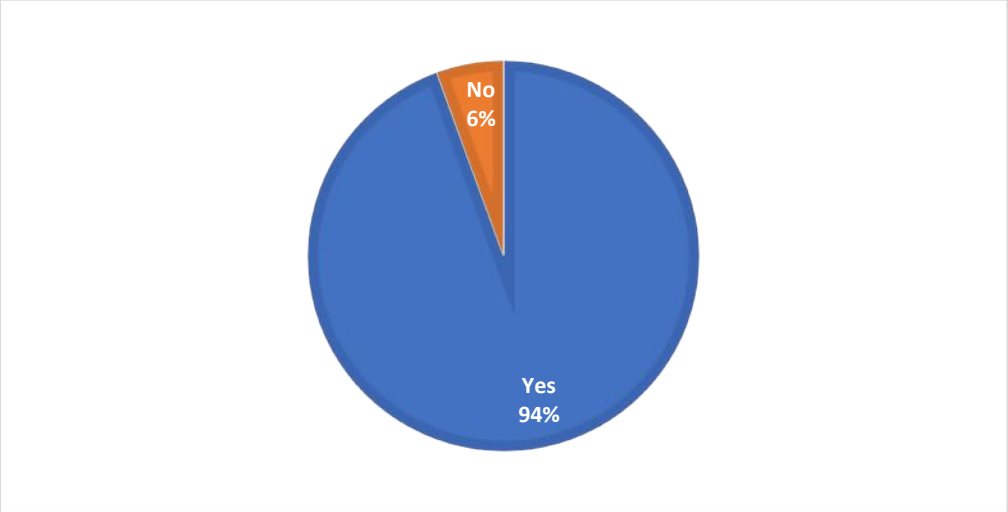
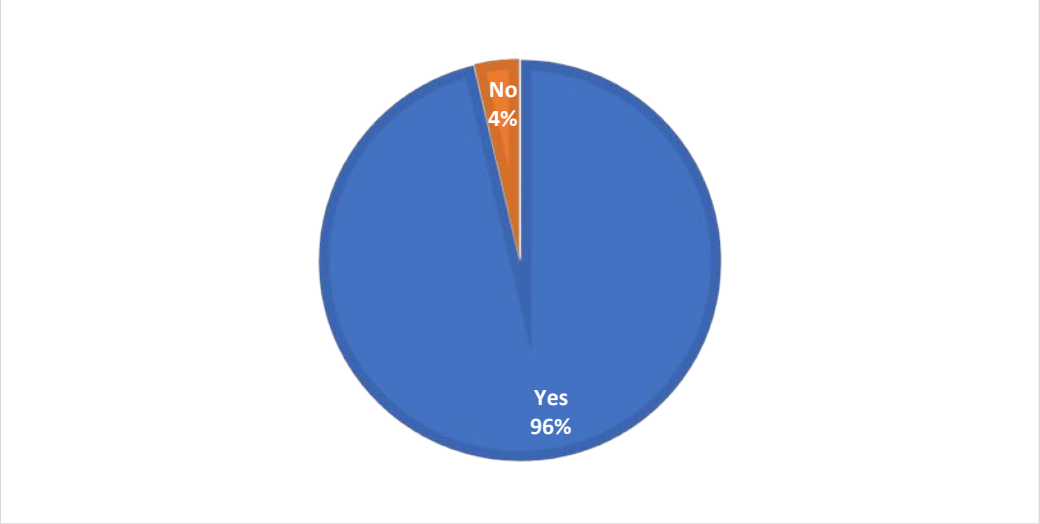


Figure 7

Willingness to disclose marijuana use to anesthesia provider prior to receiving anesthesia



Discussion

With the increasing legalization and subsequent use of medical marijuana in the United States, more patients who use medical marijuana are going to be seen in the operating room.

Marijuana has systemic effects that can put patients at risk for complications throughout the perioperative period (Horvath et al., 2019). In addition, research supports the use of multimedia educational tools as the most effective way to educate patients on health-related topics related to various disease processes. Based on this information, multimedia educational tools in the form of a digital handout and clinical scenario-based video were developed to educate patients who use medical marijuana on its anesthetic implications. It is imperative for patients to be educated on the anesthetic implications related to marijuana and patients also need to disclose their use to an anesthesia provider.

The module proved to be successful in achieving its goal set prior to the implementation period of having at least 50% of participants indicate a willingness to disclose their marijuana use to an anesthesia provider prior to receiving anesthesia. If a patient is honest about their marijuana use, an anesthesia provider can develop the safest anesthetic plan for each patient. It should be noted that the sample for this project was a convenience sample. Future projects would benefit from a larger, randomized sample to better extrapolate data. Although the sample size was relatively small, it was evident that multimedia educational tools do increase patient willingness to disclose marijuana use to an anesthesia provider prior to receiving anesthesia.

Chapter Seven: Implications for Nursing Practice

Implications for Practice

The implications for practice related to this project are apparent. If patients are unaware of the anesthetic implications of their marijuana use, it is possible they also do not understand the importance of disclosing their use to an anesthesia provider prior to receiving anesthesia. Following education with the multimedia tools, the goal of this project was to increase participant knowledge on the anesthetic implications of marijuana use and therefore increase participant willingness to disclose medical marijuana use to an anesthesia provider.

In the future, preoperative patient education should utilize multimedia tools including general information about the procedure and the anesthesia required. In addition, anesthesia providers should encourage open communication with patients around the topic of marijuana use, while informing patients about potential risks associated with marijuana and the anesthesia requirements throughout surgery. During the preoperative assessment, anesthesia providers should specifically ask about marijuana use and inquire about the patient's method of consumption and frequency of use to develop the safest anesthetic plan for each patient. When patients are honest about their marijuana use, not only is overall patient safety improved but there is an increase in patient satisfaction and recovery after surgery.

Strengths of the Project

This project highlighted several significant strengths. The first strength is the ease and convenience of accessing the multimedia educational tools. The original plan for this project was an in-person educational session at one of the Verilife locations in Pennsylvania. Due to COVID-19 restrictions and restrictions from the Pennsylvania Department of Health, the project had to be carried out in an online platform. Distributing the multimedia educational tools via email allowed

participants to read thru the digital handout and watch the educational video at their individual pace and convenience. Another strength related to the online module format is that participants can reference the digital handout and educational video in the future if needed. The third strength of this project was the use of multimedia educational tools accommodated different learning styles amongst the participants. The various methods of presenting education related to the anesthetic implications of marijuana allow for better retention of information and allow for better translation into practice.

Limitations of the Project

Despite multiple strengths in this project, limitations do exist. The first limitation is related to the sample size. Since the implementation period occurred over one-month, the sample size was limited and should be considered when generalizing data. In addition, the participants were recruited via convenience sampling, which could potentially affect validity of the results. Convenience samples may lead to the inability to generalize results to a specific population. Another limitation of this project is the inability to determine if participants did admit marijuana use to an anesthesia provider if they required anesthesia for a procedure after completion of this project.

Linkage to DNP Essentials

The eight DNP Essentials as outlined by the American Association of Colleges of Nurses (AACN) are considered the foundational competencies necessary for all graduates of any DNP program. The DNP students utilized the eight DNP essentials as the cornerstone in designing, implementing, and evaluating this project. Essential I, scientific underpinnings for practice, was achieved by performing a comprehensive literature search to determine the anesthetic implications related to marijuana. In addition, evidence was found to support the use of

multimedia education for patient teaching. A PICO question was then formulated and presented to the Cedar Crest College graduate faculty. Essential II addressed organizational and systems leadership for quality improvement and systems thinking. This essential was fulfilled by conducting a needs assessment with the CSM at Verilife. It was determined there was a lack of education amongst customers regarding medical marijuana and potential complications with anesthesia. Stakeholders and mentors were then identified and met with on a consistent basis throughout the project. In addition, a budget was determined for the project.

Essential III, clinical scholarship and analytical methods for evidence-based practice was first met with the development of the DNP project proposal. After the proposal was accepted, an application for CCC IRB was submitted. Upon approval from the CCC IRB, the project was implemented over a one-month period where the multimedia educational tools and survey were emailed to Verilife customers. This DNP essential was also met through the data collection and data analysis period of the project. The development of the multimedia educational tools in the form of a digital handout and clinical based scenario video successfully meets essential IV, information systems/technology and patient care technology for the improvement and transformation of health care. The digital educational format allowed for implementation in a convenient method when face to face education was not an option.

Essential V involves healthcare policy for advocacy in healthcare. This essential was met by working closely with the CSM at Verilife and advocating for patients who use medical marijuana. Increasing knowledge of the patients who use medical marijuana allow them to advocate for themselves prior to receiving anesthesia and ultimately improve patient outcomes. Essential VI, interprofessional collaboration for improving patient and population health outcomes was frequently used and led to the ultimate success of this DNP project. Frequent

communication and meetings occurred with the DNP students, the CSM at Verilife, CCC faculty, and project mentors to guide the project.

Educating medical marijuana users on the importance of admitting marijuana use to a healthcare provider met essential VII, prevention and population health for improving the nation's health. Since patients are more likely to admit marijuana use after knowing it might affect their care, as well as, knowing the anesthesia provider is inquiring about their use without judgement, patient education is crucial to clinical prevention in this population. Finally, essential VIII, advanced nursing practice, was achieved with specific program clinical hours. In completion of clinical hours at various hospitals throughout the Philadelphia area, the DNP students developed relationships with patients and other members of the healthcare team to improve patient outcomes. The DNP students also exhibited advanced levels of responsibility and clinical judgment throughout their various clinical experiences.

Chapter Eight: Summary of Project

Summary and Conclusions

In the United States, more than 94 million people admit to using marijuana at least once (Foundation for a Drug Free World International, n.d.). With the increasing popularity in both medical and recreational marijuana consumption, anesthesia providers will encounter these patients more frequently in the operating room. Unfortunately, patient reports of marijuana use to anesthesia providers are inconsistent and increases the risk of complications throughout the perioperative period (Boehnke, et al., 2021). However, patients are more likely to disclose their marijuana use when they are more knowledgeable about how their use may affect their care (Saleh, 2020). The review of literature demonstrated that multimedia educational tools were the most effective methods to increase patient knowledge and satisfaction, improve recall, and decrease anxiety when utilized in the preoperative education period (Chotiyarnwong et al., 2020; Friedman et al., 2011; Greene et al., 2017; Ozkan & Findik, 2020; Siu et al., 2016).

Data analysis of this project reflected an understanding of the importance of disclosing medical marijuana use to an anesthesia provider. The use of multimedia educational tools does increase patient willingness to disclose medical marijuana use to an anesthesia provider prior to receiving anesthesia. When an anesthesia provider is aware of a patient's marijuana history, frequency, and route of marijuana consumption, the anesthesia provider can alter the anesthesia plan, prevent complications, therefore, improve overall patient safety.

Dissemination Plans

Currently, there are two plans to disseminate this project. First, this project was disseminated to graduate students and faculty at Cedar Crest College on April 11, 2022. The presentation consisted of a live presentation utilizing Microsoft PowerPoint. There was an option

to virtually attend the presentation via Microsoft Teams. In addition, a poster demonstrating the major concepts and outcomes of this project were on display. Next, the project will be disseminated at the Pennsylvania Association of Nurse Anesthetists Spring Symposium 2023. The background and outcomes of this project will be presented to nurse anesthetists who practice throughout the state of Pennsylvania.

Future Ideas

There are multiple opportunities to expand upon this project for future students. The Verilife CSM expressed interest in making the multimedia educational tools available at other locations throughout the United States. The work completed will hopefully be utilized as a guide to educate patients throughout the country who use medical marijuana on its anesthetic implications. Data analysis demonstrated most patients who consume marijuana prefer smoking as their method of consumption. Future DNP students could expand upon this educational project and educate Verilife customers, or customers of another dispensary, specifically on how the inhalational method of consumption affects their anesthesia and perioperative care. In addition, this project can serve as a template for preoperative patient education. The use of multimedia educational tools can be incorporated into preoperative patient education for any surgical procedure and could include general information related to each, individual procedure and the anesthesia required.

References

Boehnke, K.F., Litinas, E., Worthing, B., Conine, L., & Kruger, D.J. (2021). Communication between healthcare providers and medical cannabis patients regarding referral and medication substitution. *Journal of Cannabis Research, 3*. https://doi.org/10.1186/s42238-021-00058-0

Chotiyarnwong, P., Boonnasa, W., Chotiyarnwong, C., Unnanuntana, A. (2020). Video-based learning versus traditional lecture-based learning for osteoporosis education: A randomized controlled trial. *Aging Clinical and Experimental Research, 33,* 125-131. https://doi.org/10.1007/s40520-020-01514-2

Echeverria-Villalobos, M., Todeschini, A.B., Stoicea, N., Fiorda-Diaz, J., Weaver, T., Bergese, S.D. (2019). Perioperative care of cannabis users: A comprehensive review of pharmacological and anesthetic considerations. *Journal of Clinical Anesthesia, 57,* 41-49. https://doi.org/10.1016/j.jclinane.2019.03.011

Friedman, A.J., Cosby, R., Boyko, S., Hatton-Bauer, J., & Turnbull, G. (2011). Effective teaching strategies and methods of delivery for patient education: A systematic review and practice guideline recommendations. *Journal of Cancer Education, 26*(1), 12-21. https://doi-org.cedarcrestcollege.idm.oclc.org/10.1007/s13187-010-0183-x

Glasgow, R. E., Harden, S. M., Gaglio, B., Rabin, B., Smith, M. L., Porter, G. C., Ory, M. G., & Estabrooks, P. A. (2019). RE-AIM planning and evaluation framework: Adapting to new science and practice with a 20-year review. *Frontiers in Public Health, 7*(64). https://doi.org/10.3389/fpubh.2019.00064

Greene, K.A., Wyman, A.M., Scott, L.A., Hart, S., Hoyte, L., & Bassaly, R. (2017). Evaluation of patient preparedness for surgery: A randomized controlled trial. *American Journal of*

Obstetrics and Gynecology, 217(2), 179.e1-179.e7. https://doi.org/10.1016/j.ajog.2017.04.017

Harden, S.M., Smith, M.L., Ory, M.G., Smith-Ray, R.L., Estabrooks, P.A., & Glasgow, R.E. (2018). RE-AIM in clinical, community, and corporate settings: Perspectives, strategies, and recommendations to enhance public health impact. *Frontiers in Public Health, 6*(71). https://doi.org/10.3389/fpubh.2018.00071

Hepner, D. (2020, February 3). *Coming clean: Your anesthesiologist needs to know about marijuana use before surgery*. Harvard Health Publishing. https://www.health.harvard.edu/blog/coming-clean-your-anesthesiologist-needs-to-know-about-marijuana-use-before-surgery-2020011518642

Horvath, C., Dalley, C.B., Grass, N., & Tola, D.H. (2019). Marijuana use in the anesthetized patient: History, pharmacology, and anesthetic considerations. *AANA Journal, 87*(6), 451-458. https://www.aana.com/docs/default-source/aana-journal-web-documents-1/marijuana-use-in-the-anesthetized-patient-history-pharmacology-and-anesthetic-considerations-december-2019.pdf?sfvrsn=ce829198_6

Huson, H.B., Granados, T.M., & Rasko, Y. (2018). Surgical considerations of marijuana use in elective procedures. *Heliyon, 4*(9). https://doi.org/10.1016/j.heliyon.2018.e00779

Leos-Toro, C., Shiplo, S., & Hammond, D. (2018). Perceived support for medical cannabis use among approved medical cannabis users in Canada. *Drug and Alcohol Review, 37*(5), 627-636. https://doi.org/10.1111/dar.12823

Lynn, R. S., & Galinkin, J.L. (2020). Cannabis, e-cigarettes and anesthesia. *Current Opinion in Anaesthesiology, 33*(3), 318-326. https://doi.org/10.1097/ACO.0000000000000872

National Conference of State Legislators. (2022, February 3). *State medical cannabis laws*. Retrieved April 1, 2022, from https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx

National Institute on Drug Abuse. (2020, July). *Marijuana research report*. Retrieved April 12, 2021, from https://www.drugabuse.gov/download/1380/marijuana-research-report.pdf?v=d9e67cbd412ae5f340206c1a0d9c2bfd

Ory, M.C., Altpeter, M., Belza, B., Helduser, J., Zhang, C., & Smith, M.L. (2015). Perceived utility of the RE-AIM framework for health promotion/disease prevention initiatives for older adults: A case study from the U.S. evidence-based disease prevention initiative. *Frontiers in Public Health, 2*(1). https://doi.org/10.3389/fpubh.2014.00143

Ozkan, Z.K., & Findik, U.Y. (2020). Determination of the effectiveness of informing with the guidance of an education booklet in patients undergoing colonoscopy: A Randomized Controlled Trial. *Journal of Perianesthesia Nursing, 35*(1), 502-507. https://doi.org/10.1016/j.jopan.2019.12.009

Pacula, R.L., & Smart, R. (2017). Medical marijuana and marijuana legalization. *Annual Review of Clinical Psychology, 13*, 397-419. https://doi.org/10.1146/annurev-clinpsy-032816-045128

Pennsylvania Department of Health. (2020, May 15). *Medical marijuana two-year final report*. https://www.health.pa.gov/topics/Documents/Programs/Medical%20Marijuana/DOH%20MM%20Official%20Two%20Year%20Report%20-%20May%2015%202020.pdf

PharmaCann. (n.d.). *About*. https://www.pharmacann.com

Polit, D & Beck, C. (2016). *Nursing research: Generating and assessing evidence for nursing practice*. (10th ed.). Wolters Kluwer.

RE-AIM. (n.d.). *What is RE-AIM?*. https://www.re-aim.org/about/what-is-re-aim/

Saleh, N. (2019, October 15). *Regular marijuana use changes anesthesia needs*. Anesthesiology news. https://www.anesthesiologynews.com/Clinical-Anesthesiology/Article/10-19/Regular-Marijuana-Use-Changes-Anesthesia-Needs/56086?sub=AAE6C43BBF898E612A5A33B8D29EA36AB7CFCDB961FECC044E76187F2461B&enl=true&dgid=X3636795&utm_source=enl&utm_content=2&utm_campaign=20191016&utm_medium=title

Siu, J.M., Rotenberg, B.W., Franklin, J.H., & Sowerby, L. J. (2016). Multimedia in the informed consent process for endoscopic sinus surgery: A randomized control trial. *The Laryngoscope, 126*(1), 1273-1278. http://dx.doi.org/ 10.1002/lary.25793

United States Drug Enforcement Administration. (n.d.). *Drug scheduling*. https://www.dea.gov/drug-scheduling

United States Drug Enforcement Administration. (2021, April 2). *Controlled substances: Alphabetical order*. Retrieved April 16, 2021, from https://www.deadiversion.usdoj.gov/schedules/orangebook/c_cs_alpha.pdf

University of Georgia School of Law. (2020, September 8). *Survey of marijuana law in the United States: History of marijuana regulation in the United States*. Retrieved April 10, 2021, from https://libguides.law.uga.edu/c.php?g=522835&p=3575350

Verilife. (n.d.). *Verilife Pennsylvania marijuana dispensaries*. https://www.verilife.com/pa

Appendix A

Qualifying Conditions for Medical Marijuana Card Under Pennsylvania Law

- Amyotrophic lateral sclerosis
- Anxiety disorders
- Autism
- Cancer, including remission therapy
- Crohn's disease
- Damage to the nervous tissue of the central nervous system (brain-spinal cord) with objective neurological indication of intractable spasticity
- Dyskinetic and spastic movement disorders
- Epilepsy
- Glaucoma
- Huntington's disease
- Inflammatory bowel disease
- Intractable seizures
- Multiple sclerosis
- Neurodegenerative diseases
- Neuropathies
- Opioid use disorder for which conventional therapeutic interventions are contraindicated or ineffective, or for which adjunctive therapy is indicated in combination with primary therapeutic interventions
- Parkinson's disease
- Positive status human immunodeficiency virus or acquired immune deficiency syndrome

- Post-traumatic stress disorder
- Severe chronic or intractable pain of neuropathic origin or severe chronic or intractable pain
- Sickle cell anemia
- Terminal illness
- Tourette syndrome

(PDOH, 2020).

Appendix B

RE-AIM Framework

Figure 1: Visualization of RE-AIM Framework (Ory et al., 2015).

Appendix C

IRB Approval

From: DocuWare Notification <noreply@docuware.cloud>
Date: Wednesday, December 1, 2021 at 8:00 PM
To: Bre'Yana Gibson <BGibson@cedarcrest.edu>
Cc: DocuWare Service Account <DocuWare@cedarcrest.edu>
Subject: APPROVED - Implementation of Multimedia Educational Tools to Increase Participant Willingness to Disclose Medical Marijuana Use to Anesthesia Providers Prior to Surgery - IRB Request Number 380

Your IRB Request has been Approved by the Project Advisor/Supervisor, the Committee Chair and the Extended Reviewer. This is the Final Approval.

Attached you'll find the IRB Request Form for this request, including any notes added by the reviewer.

If additional files were submitted the request form and additional files will be delivered together in a zipped file.

COMPLETE BY DATE: 12/1/2022

Notes: pdf

IRB Request Number: 380

Title of Research: Implementation of Multimedia Educational Tools to Increase Participant Willingness to Disclose Medical Marijuana Use to Anesthesia Providers Prior to Surgery

Review Type: EXPEDITED REVIEW

Lead Researcher: Breyana Gibson

Project Advisor/Supervisor: Catherine Zurawski DNP, CRNP, FNP-C

Date Submitted: 11/7/2021

Appendix D

Approval from Verilife

Changing the way people view cannabis.

190 SOUTH LASALLE STREET
SUITE 2950
CHICAGO, IL 60603
312.667.6250
pharmacann.com

PHARMACANN

6/4/2021

To Whom it may concern:

PharmaCann is looking forward to mutually working with Bre'Yana Gibson and Alexandra Nowicki on their IRB application for their Doctorate of Nursing Practice Project on medical cannabis. I will be the main point of contact to facilitate this project under advisement from our legal department. Please feel free to reach out to me with any questions you may have.

Kevin Harbison PharmD
MANAGER OF CLINICAL SERVICES | CLINICAL DIRECTOR OF MARYLAND
LICENSED PHARMACIST MD | NY | OH | PA
25 North Pointe Parkway | Suite 30 | Buffalo, NY 14228
[redacted] | 716.210.9496 | 888.493.6066 | Cell 716.308.1285

Appendix E

Digital Handout

CEDAR CREST COLLEGE

Created by Bre'Yana Gibson BSN, RN, CCRN and Alexandra Nowicki BSN, RN, CCRN Doctorate of Nursing Practice students at Cedar Crest College

A Need to Know Guide on Medical Marijuana Use and Anesthesia

BEFORE SURGERY

- Be honest about your marijuana use when talking to your anesthesia provider
  - Let them know about your previous marijuana use, route of use, last time you used, and any side effects you have from marijuana
- You might need additional testing, like an EKG to look at your heart rhythm
- Avoid marijuana use the day of surgery because your surgery may need to be rescheduled to prevent complications related to acute intoxication

DURING SURGERY

- Increased anesthesia needs
  - You might require more medicine to go to sleep
- Possible airway and respiratory issues due to irritated lungs especially if you smoke or inhale marijuana
- Risk of increased bleeding
- Interactions with other drugs

Remember: your provider is not judging you but wants to keep you safe during surgery

AFTER SURGERY

- You might need more pain medicine after surgery to keep you comfortable
- Withdrawal from marijuana may occur after long periods without use. You may experience:
  - Headaches
  - Anxiety
  - Cold sweats
  - Mood swings
  - Lack of appetite

IF YOU ARE NOT COMFORTABLE DISCUSSING YOUR MARIJUANA USE, YOU CAN GIVE THIS CHECKLIST TO YOUR ANESTHESIA PROVIDER BEFORE SURGERY

- What type of surgery or procedure are you having? _____
- How often do you use marijuana?
  - Daily _____
  - Weekly _____
- How much marijuana do you use? _____
- How do you consume marijuana?
  - Smoking _____
  - Edible _____
  - Oil or tinctures _____
  - Pills or tablets _____
  - Lotions or creams _____
  - Other _____
- For what condition are you prescribed medical marijuana? _____

Appendix F

Post Survey

1. Gender
    a. Male
    b. Female
    c. Other

2. Age (years)
    a. 18-30
    b. 30-40
    c. 40-50
    d. 50+

3. Location
    a. Philadelphia
    b. Chester
    c. Shamokin
    d. Williamsport

4. Method for Cannabis Consumption
    a. Inhalational (smoking)
    b. Oral (marijuana infused food)
    c. Sublingual
    d. Topical (lotion, creams, ointments)

5. In the past 30 days how many days did you use marijuana?
    a. 0-5
    b. 5-10
    c. 10-20
    d. 20-30

6. If you require surgery, would you have any hesitation in disclosing your marijuana use to the anesthesia provider for any of the following reasons?
    a. Do not want marijuana use on medical record
    b. Employment purposes
    c. Fear of judgement
    d. Other

7. After watching this presentation, do you have a better understanding of the importance of disclosing this information with your anesthesia provider(s)?
    a. Yes
    b. No

8. If you require surgery, will you inform your anesthesia provider(s) of your marijuana use?
    a. Yes
    b. No