The Use of Medical Marijuana for the Relief of Chronic Pain

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This doctoral project, directed and approved by the candidate’s committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

Dr. Nannette Glenn, Dean of the College of Graduate and Professional Studies

Date: August 2021

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Abilene Christian University
School of Nursing

The Use of Medical Marijuana for the Relief of Chronic Pain

A doctoral project submitted in partial satisfaction
of the requirements for the degree of
Doctor of Nursing Practice

by
Jacquelyn M. Paylor

September 2021
Dedication

This scholarly paper is dedicated to my parents, Ida Mae Black and Walter Ivey Paylor Jr. May I continue to prosper with your love, wisdom, and devotion to care. And may I teach and support my children—Matthew Loy, Mycah Landon (the graphic designer who recognized, “It is not your computer. It is not you, Mom. It’s your mouse!”), Marcellus Alexander, and Mandarin—as you have done for yours and will continue to for many years to come.
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Abstract

For thousands of years, medical cannabis has been used for relief of chronic pain and personal ailments. It changes users’ mental capacities and perceptions while treating and providing relief from pain and muscle spasms. As a recreational and spiritual substance, this Schedule I drug requires special consideration and certification to administer. Increasing complaints of chronic pain have led doctors to prescribe opioids for pain relief. As prescriptions for opioids have increased, the number of opioid-related mortality and morbidity incidents have also risen. The high rates of opioid-related near deaths and overdoses have led policy makers, clinicians, pharmacists, and providers to invest in medical marijuana as a more natural alternative. The purpose of this scholarly project was to describe the use of medical marijuana for the relief of chronic pain. The health belief model was used to guide this quantitative, descriptive, correlational study. The researcher used the Brief Pain Inventory to assess the use of medical marijuana for relief of chronic pain among 25 participants in one mid-eastern U.S. state. Participants were qualifying adults ages 18 to 80 seeking recertification for medical marijuana with the state’s Medical Cannabis Commission. Improved recognition of early pain management issues related to narcotics will aid providers in supporting alternative treatment measures using medical cannabis administration. Medical cannabis is safer and more effective than opioids, reducing harm to users and improving and increasing their quality of life.

*Keywords*: marijuana, cannabis, opioid, THC
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Chapter 1: Introduction

Opioids represent a modern-day health crisis for many people across the United States. On an average day, over 100 Americans lose their lives to opioid usage, which numbs pain receptors and elicits feelings of euphoria (Centers for Disease Control and Prevention [CDC], 2020). In the 1990s, pharmaceutical companies introduced opioids as safe, effective, naturally occurring, or synthetic compounds essential to nerve receptors and regulating analgesia for relief of discomfort (Gutierrez, 2008; Porter & Kaplan, 2011; Rose, 2018). Opioid usage has been on the upsurge since 2000 as a substance to relieve acute and chronic discomfort. Pain is one of the most common and troubling human experiences, affecting more than 100 million clients and prompting repeated office or primary care visits (Boehnke et al., 2019; Tompkins et al., 2017). Increasing restrictions on access to prescription narcotics (Wen & Hockenberry, 2018), as well as surges in mortality and morbidity due to opioid overdoses and prescription incidents, have encouraged medical clinicians to endorse an alternative solution for pain relief: medical cannabis.

Chronic pain complaints, including in areas of the neck, shoulders, lower back, and knees, are qualifying conditions for medical marijuana usage (Bradford et al., 2018; National Institutes of Health, 2018; Olfson et al., 2017; Tompkins et al., 2017; Vigil et al., 2017). There is increasing evidence from the literature and from professional therapists supporting the prescribing of medical marijuana as a preventative measure to aid public health officials in the fight against accidental opioid mortality and near deaths (Boehnke et al., 2019). States with legislation supporting medical marijuana have 25% fewer deaths than those without (Boehnke et al., 2019). Furthermore, clinicians in locations where medical marijuana is accepted and laws support it, write fewer opioid prescriptions (Boehnke et al., 2019). These trends are very
promising, as alternative treatments may reduce the number of individuals who use opioids and decrease mortality associated with overdoses.

**Problem Statement**

The opioid crisis is a major public health issue affecting many individuals across the United States. Doctors prescribe opioids to clients suffering from injuries causing lower back and neck pain, fibromyalgia pain, or pain from osteoarthritis or degenerative disk disease. These prescription medications, which are covered under all insurances, including Medicare, can destroy the lives of those they touch. The opioid crisis requires extensive, evolving, and endless responses to combat overdoses in U.S. communities. According to the CDC (2020), on average, 130 U.S. citizens die each day from opioid overdoses.

The purpose of this DNP scholarly project was to survey participants who are currently using medically prescribed marijuana for chronic pain. Participants were asked about their pain relief associated with medical marijuana use, use of opioids for pain management, and overall quality of life. In one mid-eastern U.S. state, clients initially certified to receive medical marijuana must visit their provider on a yearly basis to continue their participation in the medical cannabis program and gain access to the state’s dispensary. Upon this annual visit, clients will complete the Brief Pain Inventory (Short Form) and demographic survey related to their initial complaints of chronic pain, use of opioids for pain management, and overall quality of life. The aim of this study is to analyze perceptions of pain relief from medical cannabis compared to that of opioids among clients seeking renewal of certification from the Medical Cannabis Commission (MCC).
Background

Opioids are extracted from the opium poppy seed and effectively provide relief of pain as well as improvements in individual functioning. The main opioid receptors—mu, kappa, and delta—transfer across the blood–brain barrier and activate spinal and brain receptors to produce analgesia, euphoria, and sedation. Possible side effects include respiratory decline, hallucinations, dysphoria, unconsciousness, hysteria, hypotension, constipation, and urinary retention or hesitancy (Gutierrez, 2008). There are also concerns related to misuse, lack of knowledge, and fatal overdoses among opioid users, as well as profit-making scams, theft, and the potential for kickbacks among providers or “pill mill” schemes (Gutierrez, 2008; Koepke et al., 2018; Rose, 2018). Clients may be willing to beg, borrow, or steal opioids from friends and family to rid the body of pain.

Historical Background

Since 2000, there has been a resurgence of interest in medical marijuana as a nontraditional, natural, curative substitute for opioids (Lucas & Walsh, 2017). Medical marijuana is also known by the common Western aliases cannabis, weed, pot, reefer, herb, grass, and delta-9-tetrahydrocannabinol, or THC. For this project, the terms cannabis, THC, and marijuana were used. THC is the chemical responsible for the psychotropic or psychological effects of cannabis and is considered a cannabinoid (Bridgeman & Abazia, 2017; Gutierrez, 2008; National Institutes of Health, 2018). Marijuana is derived from Cannabis sativa (Gutierrez, 2008), the same plant that produces hemp, the non-psychotropic portion of cannabis. THC is considered a Schedule I drug, requiring special consideration for prescription and administration. Cannabis is native to central Asia, China, and India and has been used for the last 5,000 years for the relief of headaches, pain, and menstrual cramps and irregularities (Ren et al., 2019).
Marijuana use for recreational or spiritual and religious purposes stretches as far back as the third century BCE (Ren et al., 2019). In the United States, recreational cannabis is legal in 11 states and the District of Columbia, and cannabis has legal medical clearance in 33 states, including Maryland (Fairman, 2016; Rose, 2018). In the 19th century, cannabis was forbidden in many countries and in the United States. The first restrictions on the purchase of THC were created in 1906 in Washington, D.C. In 1937 the Marihuana Tax Act was passed, prohibiting the sale and distribution of hemp and cannabis in the United States (Bridgeman & Abazia, 2017). Following the decriminalization of THC between the years of 1973 and 1978, more states reduced possession to a misdemeanor beginning in 2012, with 11 states legalizing medical marijuana with FDA approval (Harris & Martin, 2019; National Institutes of Health, 2018).

**Epidemiology**

The rising number of unintentional drug overdoses involving the misuse of opioids is a crisis among families and within communities. The Centers for Disease Control and Prevention (CDC, 2020) determined over 70,000 U.S. citizens died in 2017 from drug overdoses. Based on age-adjusted deaths, the rates of drug overdose deaths increased by 9.6% between 2016 (19.8 per 100,000) and 2017 (21.7 per 100,000; National Institutes of Health, 2018). Also, the state of West Virginia was noted to have the highest rate of death due to opioid overdose (57.8 per 100,000), followed by Ohio (46.3 per 100,000), Pennsylvania (44.3 per 100,000), and the District of Columbia (44.0 per 100,000). Between 2017 and 2019, West Virginia remained the leading state in the country for fatal opioid overdoses (49.6 per 100,000), followed by Ohio (39.2 per 100,000), and D.C. (34.7 per 100,000). Maryland was fifth (32.2 per 100,000), and Texas was 45th out of 50 states (5.1 per 100,000; CDC, 2020). These statistics have led policy makers and federal authorities to research methods for saving lives and controlling a growing epidemic.
Government and policy representatives, as well as pharmacists, encourage providers to prescribe Narcan (naloxone) administration for possible overdoses. Providers prescribe this medication for client home use, similar to an EpiPen, and it is kept on hand by law enforcement agencies and emergency medical technicians (EMTs). Having access to this antidote as a nasal spray or intramuscular syringe allows for time-sensitive administration, reducing the number of deaths from overdoses by blocking the effects of opioids (Tippey et al., 2018).

**The Opioid Crisis**

The mid-eastern state that was the focus of this investigation responded to the opioid crisis by declaring a state of emergency on March 1, 2017 and providing $40 million in funding to combat the opioid epidemic (Americans for Safe Access, 2020). The governor has become an advocate for increased federal support and mandates for states, especially with opioid addiction (Americans for Safe Access, 2020). The governor’s administration is committed to saving lives while working to endorse the state’s efforts with programs and initiatives such as a heroin and opioid emergency task force, an interagency heroin and opioid coordinating council, and a commission to study mental and behavioral health (Americans for Safe Access, 2020).

Healthy People 2020 objectives focused on the reduction of substance abuse and improvements in quality of life for every individual. Opioid abuse is cumulative and contributes to financial hardships and social, somatic, psychogenic, and public health issues (Office of Disease Prevention and Health Promotion, 2018). The Healthy People 2020 recommendations included the objective to decrease narcotic overdose mortality rates involving opioid usage (Office of Disease Prevention and Health Promotion, 2018). A priority issue among Healthy People 2030 is the focus on opioid usage; the goal is to initiate more programs and education on
opioid exploitation, dependency, and OUDs through comprehensive alliances that expand approaches to prevention and recovery measures (Society for Public Health Education, 2019).

Medical marijuana is used for relief of nausea, epileptic seizures, cancer pain, multiple sclerosis, muscle spasms, anxiety, depression, anorexia, inflammation, and chronic pain (Bradford et al., 2018; Gupta et al., 2019; Lucas & Walsh, 2017; National Institutes of Health, 2018; Olfson et al., 2017; Wen & Hockenberry, 2018). Cannabis is not just for smoking; medical marijuana can be administered via flower for smoking or grinding into butter for baking or via tincture administered under the tongue or through vape pens, THC creams, capsules, chewable gummies or tablets, bath bombs or salts, tea elixirs, cooking oils, honey sticks, transdermal patches, or dabbing.

As of April 2019, all registrants with the MCC must hold a card to participate in the state’s dispensary purchases. Clients receive a 16-character alphanumeric code from the MCC, activated by a qualifying clinician who functions under the authority of the MCC. Pain is a qualifying condition for medical cannabis. However, it is unknown whether marijuana use effectively manages chronic pain or affects opioid usage. A primary care clinic provides medical marijuana certifications to those who have provided demographic documentation and have received a code from the MCC.

**Opioid Usage**

Opioid analgesics or narcotics are naturally occurring or synthetic compounds that bind to nerve receptors and regulate analgesia using an agonist and antagonist (Gutierrez, 2008; Porter & Kaplan, 2011; Rose, 2018). The U.S. Food and Drug Administration (FDA) sanctions opioid administration under the prescription guidelines and hazards authenticated by the CDC (Rose, 2018). Common opioids include morphine, oxycodone (OxyContin), hydromorphone, and
tramadol (Gutierrez, 2008; Rose, 2018). With the conceptualization and assessment of pain as the “fifth vital sign” (Bradford et al., 2018, p. 2), anesthesiologists prescribe clients opioids for acute postoperative pain relief in the hopes of weaning to a nonsteroidal or anti-inflammatory substance (Koepke et al., 2018).

**Purpose**

The purpose of this scholarly, quantitative, descriptive, correlational DNP project was to survey patients to determine if medical marijuana is an effective method for relief of pain among qualifying adults ages 18 to 80 who participate in dispensaries located in a mid-eastern state for the relief of chronic pain, as determined by a 1-year follow-up survey at recertification.

**Significance**

This DNP scholarly project is significant because it contributes to early recognition of pain issues in primary care, supports alternative methods for relief of chronic pain, and promotes and supports the use of educational resources to prevent and treat opioid addiction. Clinicians must stay abreast of current interventions, guidelines, and treatments related to opioid use and addiction. In light of medical cannabis laws and increasing acceptance of medical cannabis’s use, advanced practice registered nurses (APRNs) have an ethical obligation to provide interventions and care to individuals suffering from opioid use disorders (OUDs). The goal among APRNs is to prevent opioid misuse and overdoses by encouraging safety with the use of medical marijuana and improving public health access while using ethical principles of autonomy, beneficence, and nonmaleficence as an ethical guide in medical cannabis usage (Glickman & Sisti, 2019).

**Nature of the Project and Population**

The population consisted of adult subjects 18 to 80 years of age who participated in the MCC and were seeking annual renewal after a minimum of 1 year of use. Participants in this
quantitative, descriptive, correlational study originally sought medical cannabis for treatment of chronic pain. They signed a waiver, and patient identifiers were excluded from the study analysis. Data analysis included percentage, frequency, mean, standard deviation, Pearson’s $r$, Kendall’s tau, and Spearman’s rho (Degenhardt et al., 2015). Participants provided descriptive demographic data, their pain location, their previous uses for pain relief, and their pain ratings obtained using the Brief Pain Inventory (BPI) data collection instrument during an office visit prior to the annual renewal process, as proposed by the state.

Providers in the mid-eastern state grant cannabis certification under the Compassionate Use Act. Under this act, physicians may prescribe medical cannabis for chronic pain relief and nausea (Samuels, 2019). Certification in the mid-eastern state requires participants seeking dispensary use to answer demographic questions, submit a photo taken on a white background, submit front and back photos of the required identification card (a driver’s license or passport photo may also be used), and then wait up to 6 weeks for an MCC certification number. Individuals who are under the age of 18 are eligible to apply to the MCC but require a qualifying certified caretaker/adult 18 years of age or older to purchase cannabis from a dispensary. Clients must then locate a provider certified by the MCC to activate the certification number in order to proceed into a dispensary for purchase.

**Question Guiding the Inquiry**

The following PICOT question was used to guide this survey of qualifying adults ages 18 to 80 currently using medically prescribed marijuana for chronic pain about their pain relief with use, their use of opioids for pain management, and their overall quality of life:
**PICOT:** Is medical marijuana an effective method for pain relief among qualifying adults ages 18 to 80 who participate in dispensaries in one mid-eastern state for the relief of chronic pain, as determined by a 1-year follow-up survey at recertification?

**P:** adults ages 18 to 80 with complaints of chronic neck, back, knee, or shoulder pain and opioid usage

**I:** qualifying adults with MCC certification

**C:** comparing opioid administration to cannabis usage in the control of chronic pain

**O:** treatment retention, no drug-related harm or death, and reduction in, or resolution of, pain

**T:** 1-year follow-up survey at recertification

**Theoretical Framework**

The health belief model (HBM) was the theoretical framework used to guide this study. The HBM is based on the idea that an individual’s willingness to modify their health habits is due to variants, motivation, and the effectiveness of what is regarded as unhealthy. It also stresses the possibility of contracting or changing the consequences of a disease or illness, which restructures theoretical expectations (Rosenstock et al., 1988). Use of opioid therapy, use of medical cannabis, and the HBM framework were incorporated in this study.

**Scope and Limitations**

This study was conducted at a medical office in a mid-eastern state. The primary investigator for this scholarly project was Jacquelyn M. Paylor, a DNP student at Abilene Christian University (ACU). The study used a convenience sample of 25 participants, ages 18 to 80, who had complaints of chronic pain and were seeking recertification with the MCC at 1-year renewal. Participants provided informed consent and completed a waiver and patient identifiers.
Individuals who did not provide complete demographic information and those who did not complete the BPI were excluded from the project.

Study limitations included the use of only one research (office) site and the small sample size. The minimum age of participants was 18. Minors and their caregivers were excluded. The study may require a change in the age limit. Further, participants may not have been truthful when answering the research questions or may not have provided a thorough response. Some participants who met the requirements refused to participate, which may have limited the value of the responses. Clients who were unable to give verbal or physical responses to questions asked were excluded from this study.

**Key Terms**

Throughout this scholarly project, the terms *marijuana, cannabis,* and *THC* are used to describe the Schedule I drug. THC represents the crystalline compound delta-9-tetrahydrocannabinol, which is responsible for the drug’s psychotropic effects (Bridgeman & Abazia, 2017; Gutierrez, 2008; National Institutes of Health, 2018). Opioids represent a compound derived from the opium plant (Gutierrez, 2008) used to provide pain relief without the psychotropic effects of some pain relievers. Opioid use can be very addictive, leading to death or near-death experiences from drug overdose.

**Summary**

Medical cannabis offers many physical and mental benefits that opioids do not. With continued cannabis usage, clients report improved activities of daily living as well as a new sense of well-being, decreased chronic pain compared to weaning opioid usage, and elimination of opioid administration. Individuals are researching and requesting more natural methods for chronic pain therapy, and medical cannabis may be the product they are seeking. Medical
marijuana is a safe and less intrusive solution for pain relief. Clients who currently take opioids report that administration of medical cannabis decreases or eliminates opioid usage. For this study, the BPI questionnaire was used to illuminate client experiences as they relate to prescription of medical cannabis in the relief of chronic pain, use of opioids to manage pain, and overall quality of life. Research results showed participants’ preferences regarding cannabis administration and how it has changed or affected their quality of life.
Chapter 2: Literature Review

This chapter provides a review of the literature that guided this scholarly DNP project. The HBM was the theory used to guide this project and support the literature review. The purpose of this study was to survey patients who were currently using medically prescribed marijuana regarding their relief from chronic pain, use of opioids for pain management, and overall quality of life with cannabis use. The goal of this literature review was to probe qualitative views and effects of medical cannabis on participants with complaints of chronic pain.

Literature Search Methods

Key terms related to the PICOT question included medical marijuana/cannabis/THC, chronic pain, opioid therapy, prescription pain medications, and health belief model. The initial search was conducted in July 2019 using the Google Scholar search engine with the keywords medical marijuana, chronic back pain, opioid therapy, pain therapy, and health belief model for articles from 2015 to the present. Numerous research articles and references were discovered. Three to five of the articles related to the topic were not available but may have been an asset to the project. Before medical marijuana was added to the search, articles using the terms opioids and chronic pain yielded 3,671 resources based on the topic. In September 2019, several other search engines were used. Medline, with the search narrowed to medical marijuana and chronic pain, yielded 36 articles, books, and videos. CINAHL, using the terms medical cannabis and chronic pain, generated 105 citations for review. PubMed showed 45 results using the terms medical cannabis, chronic pain, and opioid therapy. Using the three terms—opioids, chronic pain, and medical cannabis—greatly narrowed the topic, making it reasonable to review the article titles. I also located articles found in Medline, CINAHL, or PubMed with Google Scholar.
Studies focusing on cancer pain and medical marijuana were avoided and not included in the collection of the literature review.

**Chronic Pain and Medical Cannabis**

While there are no clinical research trials related to relief of chronic pain with the use of medical cannabis, many surveys, questionnaires, meta-analyses, meta-regressions, and literature reviews address the use of medical marijuana for the relief of chronic pain. Many of these studies include elderly Americans and either participants who have used THC in states where it is legal to purchase, such as Alaska, Colorado, California, Maine, Massachusetts, Michigan, Nevada, Oregon, Vermont, D.C., or Illinois, or participants who have obtained it illegally.

Zaller et al. (2015) conducted a cross-sectional study of 200 medical cannabis recipients at two Rhode Island Compassion Centers who used medical cannabis for pain relief. Researchers asked clients to report their pain intrusion using the BPI. A Rhode Island hospital review board approved all study procedures. Clients used the BPI to self-report pain severity on a scale of 0 to 10. Researchers used logistic regression analysis to conclude that a pain response of 5 or greater resulted in meaningful intrusion of pain into activities such as ambulation, mental health, slumber, and how individuals relate to others (Zaller et al., 2015). Results showed study participants under the age of 60 who visited a Compassion Center did so at least once monthly (95%), and half of the individuals reported weekly visits (Zaller et al., 2015). Pain severity, as measured by the BPI, had a median score of 5 out of 10, and pain intrusion had an average score of 5.4 out of 10 (Zaller et al., 2015). Clients who were older ($OR = 1.36$, 95% CI [1.4, 1.78]) or who had replaced marijuana with prescription narcotics ($OR = 2.47$, 95% CI [1.23, 4.95]) were more likely to have pain scores greater than 5 (Zaller et al., 2015).
Conclusions from the study by Zaller et al. (2015) showed that marijuana represents a safer replacement for pain relief compared to opioid therapy and that it has fewer side effects than narcotics for pain relief. Due to the increase in fatalities from opioid overdoses, medical cannabis may offer a safer alternative for pain relief. Limitations of the study by Zaller et al. (2015) included a study sample of 52%, which did not represent generalizable data consistent with most Compassion Centers in Rhode Island. Clients with a history of significant alcohol use, high school or equivalent education, or a low socioeconomic background had higher pain scores, as did individuals between the ages of 40 and 64. Participation in the study was self-selected, increasing the probability of selection bias.

Nugent et al. (2018) conducted a prospective cohort study to examine long-term opioid use and medical marijuana therapy. Researchers hypothesized that participants using medical cannabis would have greater intensity of discomfort and manifestations of anxiety and depression. Researchers also hypothesized that medical marijuana would lead to increased use of alcohol, tobacco, and narcotics (Nugent et al., 2018). Study participants (N = 371) received a personalized invitation with study details and follow-up phone calls. The institutional review boards in Oregon and southwest Washington monitored study procedures, and participating clients received a $50 gift card for compensation (Nugent et al., 2018).

According to Nugent et al. (2018), clients answered demographic questions, responded to the Chronic Pain Grade Scale, and completed a quality-of-life health survey and the AUDIT screening. Researchers also extracted pharmacy data to determine the length and dose of opioid usage. Data analysis included t tests, a Mann–Whitney U test, chi-square test, Fisher’s exact test, and bivariate comparisons using SPSS Statistics 22.0. Study results showed 18% (n = 67) of study participants had used THC for pain in the last month. Sixty percent (n = 40) used cannabis
two or more times weekly, and 66% (n = 44) stated cannabis moderately reduced their pain. Thirty-one percent (n = 21) held a medical cannabis card. Results also showed all p values calculated were less than 0.05. Participants with a higher risk for narcotic misuse (M = 17.0 versus M = 11.5, p < 0.00001) endorsed medical marijuana use and also met the criteria for increased alcohol misuse (25% versus 16%, p = 0.024) and increased tobacco misuse (M = 16.8 versus M = 10.0, p = 0.03). Researchers used a linear regression model to determine the affiliation between medical marijuana use and the risk of narcotic misuse, participant demographics, narcotic use, medical comorbidity, anxiety/depression, and the intensity of pain (Nugent et al., 2018). Results showed a positive correlation between prescription narcotic use (B = 0.17, p = 0.0001), with opioid prescription misuse (adjusted R² = 0.21, F(7, 363) + 14.59, p < 0.001), and cannabis use. Summary findings showcased the need for screening, assessing, continued monitoring, and specialized support with long-term opioid administration and medical marijuana use (Nugent et al., 2018).

Boehnke et al. (2019) conducted a retrospective cross-sectional study on clients with chronic pain to determine if medical cannabis was useful and clients’ opiate intake decreased. The study consisted of 185 participants who were recipients from a Michigan dispensary. Participants completed the 2011 Fibromyalgia Survey Criteria for pain and answered questions about demographics and conditions related to cannabis use (Boehnke et al., 2019). Statistical analysis consisted of Pearson’s correlation test, student t tests, and analysis of variance (Boehnke et al., 2019). The University of Michigan institutional review board monitored the study, and participants consented freely and could discontinue participation at any time (Boehnke et al., 2019).
Results of the study conducted by Boehnke et al. (2019) showed 21% \( (n = 38) \) used cannabis two to six times weekly and 79% \( (n = 146) \) used cannabis daily. Clients also reported self-reduction of medication usage, including opioids (medications such as Vicodin, NSAIDs, antidepressants, SSRIs, and SSNIs) after cannabis use \( (p < .001) \), as well as increased pain relief with cannabis use \( (p < .001) \). The researcher is not sure if this decrease in opioid use was due to a reduction in provider prescription writing or access, or if it was due to client self-reduction of medication intake. There was also a significant decrease in side effects associated with opioid usage \( (r = .37, p = .0002) \), which indicated a possible health benefit of marijuana replacement for opioid therapy and pain management. Limitations to this study included participant use of marijuana for an average of 4 years and no baseline pain scores were known prior to the use of cannabis. Due to recent concerns about opioids and encouragement of providers to decrease opioid prescriptions and administration, researchers could not explain the decrease in reporting of narcotic use among study participants (Boehnke et al., 2019).

**Opioids and Pain Management**

Gate control theory, proposed by Melzak and Wall (1965), describes how a series of neurological “gates” control noxious sensory information to the spinal cord (Deardorff, 2017). This theory uses concepts from the central nervous system to describe how pain is evoked by sensory input, injury, and small nerve fibers. These signals are allowed through, while signals from large nerve fibers are blocked (Deardorff, 2017; Melzak & Wall, 1965). Pain represents a disruption of homeostasis by injury, initiating hormonal, behavioral, and perceptual changes in the body (Deardorff, 2017).

Piper et al. (2017) conducted a qualitative analysis of patient strengths and limitations related to medical marijuana use. The study consisted of 984 participants who were members of
a northeastern dispensary with locations in Maine, Vermont, and Rhode Island. Participants completed an online survey on pain, including type and origin of the pain, other health conditions, and medical diseases and demographics (Piper et al., 2017).

Results from Piper et al. (2017) showed the favored route of cannabis administration among almost half (46.2%) of participants was smoking a joint, pip, or bong. Almost a quarter (23.4%) of participants preferred vaping, 13.8% edibles, 12.0% tincture use, 3.9% concentrates, and 0.7% topical use. Seventy-four percent of clients stated that cannabis provided complete relief of pain. Participants with back and neck pain had a rating of 75% for pain relief and effectiveness ($t [972] = 3.29, p \leq 0.001$; Piper et al., 2017). Clients characterized medical marijuana as being “natural” and “relaxing” and having an “inability of overdose” (Piper et al., 2017, pp. 7–8). Clients also reported an 80% reduction in pain medication and the easing or decreasing of side effects from prescribed narcotics due to the addition of cannabis. Negative themes focused on cost (cannabis is expensive), cash being the only acceptable form of payment in some states, and insurance not covering or supporting purchase of cannabis (Piper et al., 2017). Participants also expressed concerns about employers discovering their THC use and lack of provider support (Piper et al., 2017).

Limitations to the study by Piper et al. (2017) included limiting participants to New England dispensaries, with variations in requirements among states. Ethnicity was an important characteristic due to Hispanics having a greater risk of cannabis dependence than Whites. Studies need to be more culturally diverse with regard to ethnicity and location. Responses were based on participants self-reporting their beliefs about and favorable and unfavorable experiences with using medical marijuana for relief of chronic pain (Piper et al., 2017).
Reiman et al. (2017) conducted a cross-sectional survey to collect data about marijuana use as a substitute for narcotic and nonnarcotic pain medication, perceived side effects, and interpretation of the stigmas attached to medical marijuana. Participants were users of the Hello MD database for clients using medical marijuana in the state of California. Of the 67,422 participants in the database, a sample size of 2,897 clients was used. Participants answered a demographic survey, the Tilray Observational Patient Survey, as well as questions on the condition or reason for cannabis and opioid use and what type of nonopioid drug management was used (Reiman et al., 2017).

Results from Reiman et al. (2017) showed 30% (n = 841) reported narcotic use in the last 6 months and 81% strongly agreed cannabis was more sufficient to treat their condition than administering marijuana with opioids. Ninety-seven percent decreased their opioid usage, and 92% strongly agreed that marijuana had fewer side effects than narcotics. Seventy-one percent of clients strongly agreed that marijuana produced the same pain relief as their opioid medication, and 93% strongly admitted that it would be more feasible to switch to medical cannabis to remedy their condition, if available (Reiman et al., 2017).

Limitations to the study by Reiman et al. (2017) included the lack of statistical analysis incorporated into study results. Data analyses focused on participants’ perceptions without objective measures of marijuana or narcotic usage. Patients may have been biased by the study’s title (“Cannabis as a Substitute for Opioid-Based Pain Medication”) and may not have disclosed other chronic conditions besides chronic pain (Reiman et al., 2017).

**Quality of Life**

Frank et al. (2016) conducted a qualitative study using in-person interviews to explore participants’ opinions on opioid tapering. The study sample size consisted of 24 clients from a
Colorado health care program, and the HBM guided the study. Participants self-reported opioid therapy for 6 months or more, completed a demographic survey, and answered questions regarding narcotic use. Researchers examined the data using deductive reasoning, the HBM, the literature on the topic, and an inductive approach to identify new themes (Frank et al., 2016).

Results from the study by Frank et al. (2016) showed 63% (n = 15) of clients complained of neck and back pain, 13% (n = 3) musculoskeletal pain, and 17% (n = 4) fibromyalgia. Participants denied having a previous overdose but expressed concern about increased pain and possible withdrawal with tapering opioid dosing. The use of facilitators, social support, and health care professionals was critical for initiating and sustaining opioid tapering. Patients who tapered or discontinued narcotic prescriptions reported quality-of-life improvements. Limitations to the study included not exploring the ethnic or socioeconomic background of cannabis users and using participants from primary care settings in one metropolitan area. A more diverse population and location are needed. Recall and social bias should not be excluded (Frank et al., 2016).

Shah et al. (2017) conducted a study to measure pre- and postadmission pain levels during a 3-week, 40-hour rehabilitation program. The framework of the program supported functional restoration through weekly group cognitive behavioral therapy, relaxation with biofeedback techniques, psychoeducation, occupation and physical therapy, and sessions on mood and stress management. The sample consisted of 48 participants, 24 of whom tested positive for THC and 24 of whom tested negative with a urine specimen. All participants self-reported prescription narcotic use on admission. Study measures included demographics, previous substance and alcohol abuse, depression scale, and pain assessment. Statistical analyses
consisted of a Mann–Whitney U test, chi-square test, and independent samples t tests (Shah et al., 2017).

Results from the study by Shah et al. (2017) showed an 83% completion rate (THC-positive group, \( n = 18 \); THC-negative group, \( n = 22 \)). Of the THC-positive group, 63% \( (n = 15) \) reported daily cannabis use and previous history, and 67% \( (n = 16) \) reported alcohol use three to four times monthly. Of the THC-negative group, 46% \( (n = 11) \) reported daily cannabis use and previous history, and 50% \( (n = 12) \) reported alcohol use three to four times monthly. Both groups reported decreased pain at discharge versus admission (THC-positive group, \( M_1 = 4.65 + 0.94 \), \( M_2 = 3.07 + 1.15 \); THC-negative group, \( M_1=4.67 + 1.00, M_2= 3.00 + 1.15 \)). Both groups also reported significant improvements in depressed mood with mental health treatment (THC-positive group, \( M_1= 26.67 + 9.73, M_2= 7.67 + 6.35 \); THC-negative group, \( M_1= 23.09 + 9.79, M_2= 10.64 + 7.02 \)). Finally, both groups reported improvements with responses to pain, and 10 participants who reported opioid use on admission were no longer using an opioid for pain management at discharge. These results show the necessity of incorporating mental health therapy along with the removal of opioid administration (Shah et al., 2017).

Limitations to the study by Shah et al. (2017) include the small sample size. Results included qualitative participant and provider descriptions from progress notes. The use of a matched group model may have decreased confounding variables but may not have represented the client population. Also, a longer, more extensive rehabilitation term and a randomized sample would assist with validating findings (Shah et al., 2017).

**Theoretical Framework**

The theory used in this DNP scholarly project was the HBM, a classic theory from psychology regarding cognitive influences involved in decision-making using a self-efficacy
link. Social psychologists Irwin Rosenstock, Godfrey Hochbaum, S. Stephen Kegeles, and Howard Leventhal developed the HBM in the 1950s at the U.S. Public Health Service to study the collapse of screening applications among individuals with tuberculosis (Rosenstock, 1974). The model is based on the idea that an individual’s willingness to modify their health habits is due to variants, motivation, and the effectiveness of what is regarded as unhealthy. It also stresses the possibility of contracting or changing the consequences of a disease or illness, which restructures theoretical expectations (Rosenstock et al., 1988). The practical implications of the HBM are focused on participants’ collective beliefs about, or the perceived threat of, a health issue and reducing that issue without penalty to the client (Rosenstock et al., 1988). If individuals perceive that their risk or susceptibility is low, they will not be motivated to change their perceptions or behavior, but if their disorder is perceived to be high risk, they may be more likely to change their behavior (Rosenstock et al., 1988).

The HBM describes, projects, and guides the behavior of individuals and is divided into categories (Rosenstock, 1974). External variants included demographic characteristics, personality aspects, and other contributing psychological traits (Rosenstock, 1974). Potential threats behind the motivation coincide with demographic and personality aspects, which influence a perceived threat or action (Rosenstock, 1974). The perceived severity relies on the individual’s desire to develop new habits, if deemed at risk, and the perceived vulnerability relies on the expectation an individual will change their habits to avoid consequences based on their perception of the outcome (Rosenstock, 1974). Subconscious factors and peer pressure from others influence an individual’s response to the benefit-versus-barrier efficacy of the health belief (Rosenstock, 1974). Recognized benefits support an individual’s change in a habit, if it is beneficial, while perceived obstacles sustain that changing health habits can produce physical
and monetary discrepancies, as well as loss of time (Rosenstock, 1974). Modifying variants can change perceptions or influence an individual’s demographics and emotional or structural variables (Rosenstock, 1974). Two other variants—cues to action and self-efficacy—reinforce what it takes to get an individual to change. A cue to action motivates the person to actually make the change, and self-efficacy assesses an individual’s belief or faith in their ability to actually reverse the behavior (Rosenstock, 1974). Combining these artifacts influences a change in the behavior and cues the individual to act or change (Rosenstock, 1974).

For example, for an individual (Person) who desires to cease opioid therapy (Behavior) by participating in a healthier lifestyle with medical cannabis therapy (Outcome), the belief is that opioid cessation will promote a better health response (Outcome Expectation), allowing for healthier and greater alternatives for pain relief (Efficacy Expectation; Rosenstock et al., 1988). The implications for clinical practice focus on the assessment of variables as listed in the HBM and treatment interventions for chronic pain, which provide short-term improvements as perceived benefits for health issues (Rosenstock et al., 1988). The incorporation of verbal influence is the most powerful deterrent or persuasive movement to motivate a person toward change, whether it is the influence of a friend with experience using THC or a provider who specializes in medical THC (Rosenstock et al., 1988). Thus, the success or failure of an action is based on self-efficacy.

Summary

Medical cannabis offers many physical and mental benefits compared to the use of opioid therapy. Cannabis is a naturally occurring product shown to have few to no side effects and no potential for overdose. With continued cannabis usage, clients report improvements in activities of daily living and a renewed sense of well-being, as well as a decrease in chronic pain compared
to weaning opioid usage or elimination of opioid administration (Boehnke et al., 2019; Frank et al., 2016; Nugent et al., 2018; Piper et al., 2017; Reiman et al., 2017; Shah et al., 2017). Medical marijuana costs more to administer and is not covered by insurance companies for reimbursement. Further, stigma is attached to smoking cannabis, though cannabis is not just for smoking. It may be administered via flower that is ground into butter for baking purposes, as a tincture under the tongue, or by using vape pens, THC creams, capsules, chewable gummies and tablets, bath bombs and salts, tea elixirs, cooking oils, transdermal patches, or dabbing. The odor of cannabis may be offensive to others, depending on the form of administration. The use of vape pens has been very popular among cannabis users due to the low odor and ease of use, though vape pens have been taken off the market for evaluation due to the many health concerns and respiratory infections among users.
Chapter 3: Methodology

The aim of this study was to analyze patient perceptions of pain relief from medical cannabis compared to opioids among clients seeking renewal of certification from the MCC of a mid-eastern state. Providers’ interest in medical cannabis has increased due to the opioid epidemic and the medical crisis surrounding recognized high-risk opioid behaviors, increased opioid morbidity and mortality rates from long-term narcotic usage, prescriber reluctance, and pressure by authorities to limit prescription writing and opioid dosing (Wen & Hockenberry, 2018). The overuse of opioids for pain relief and new restrictions for narcotic therapy have encouraged liberalization of medical cannabis as a method to resolve or de-escalate the opioid crisis (Wen & Hockenberry, 2018).

Purpose

The purpose of this DNP scholarly, quantitative, descriptive, correlational project was to survey qualifying adults who currently use medically prescribed marijuana for relief of chronic pain and who participate in a dispensary located in one mid-eastern state. Participants completed a demographic questionnaire and the BPI survey and responded to the PICOT question, “Is medical marijuana an effective method for pain relief among qualifying adults ages 18 to 80 who participate in dispensaries in one mid-eastern state for the relief of chronic pain, as determined by a 1-year follow-up survey at recertification?” Individuals also responded to the BPI survey of how pain has interfered or affected their quality of life.

Project Plan

Potential participants in this study sought medical cannabis access with the renewal of MCC certification in one mid-eastern state. Clients paid for a consultation and renewal fee, and then the secretary at the office where the renewal took place directed them to me as the provider
and principal investigator of this study. In light of CDC mandates due to the COVID-19 pandemic, client interactions—traditionally conducted as face-to-face office visits—were conducted as virtual telemedicine/telehealth interactions or via phone. Clients were asked why they originally sought medical cannabis certification. If clients sought certification for pain relief, they were invited to voluntarily participate in this study. Once the consultation for medical cannabis renewal was completed, clients received a verbal review of the participant information sheet (see Appendix C).

The information sheet included the study title, name of primary investigator, and purpose and duration of the research study. Participants received this information verbally and chose whether or not to participate in the study. Participant responsibilities included completion of responses to demographic questions, completion of the BPI survey, and documentation of their responses to hypothetical questions. Clients received a list of rights and the opportunity to refuse or withdraw consent to participate without reprisal or a change in clinician–patient correspondence (Yip et al., 2016). Clients also received full disclosure of alternative management treatments that might be advantageous to them (Yip et al., 2016). Individuals learned of possible risks and inconveniences due to study participation and were told there was no cost to participate. I kept confidential study data and health records private and protected under the ACU’s assurance and IRB bylaws. I also contacted participants in a timely fashion if additional information was required, and they received the contact information of the primary investigator in order to ask questions pertaining to the study or policy regulations (Yip et al., 2016). Clients also received information about the number of study participants and had the opportunity to complete the study questionnaires and receive renewal of MCC certification for 1 year. The provider also verified their MCC card expiration date for documentation.
**Instrument/Measurement Tools**

In-depth telemedicine interviews were used to follow up as to why clients sought medical cannabis and what medical condition or problem they sought to treat. If they sought medical cannabis to treat chronic pain, they received the BPI for chronic pain assessment and medical cannabis use. Clients responded to nine sections evaluating current pain, pain location, treatment of pain, and pain relief responses. Then they responded to questions about how pain interfered with their daily living and quality of life. This was assessed on a 10-point Likert-type scale, with higher scores indicating increased pain severity and quality-of-life changes. Participants also answered questions related to demographics and the study hypothesis.

**Reliability and Validity**

Many pain tools exist and are used to measure levels of clinical pain. The BPI tool was developed as a self-reporting measurement of client pain (Cleeland, 1991). The BPI short form uses a scale from 0 to 10 to assess the severity of discomfort and the amount of pain relief from nonsteroidal anti-inflammatory drugs (NSAIDs) using a 24-hour recall of pain occurrence. The short form is the preferred survey for clinical and study applications. The inventory was originally used to assess pain in cancer clients (Cleeland, 1991).

The test–retest reliability of patient pain perception with the BPI is 0.93, with responses of the “worst” pain and “average” discomfort (0.78) with high cancer pain (Cleeland, 1991). Test–retest reliability with regard to pain severity was 0.59 due to adjustments and fluctuations in pain intensity (Cleeland, 1991). The BPI was used to determine the severity of pain and the intrusion of pain on quality of life and daily activities. Cronbach’s alpha provided an internal stability of 0.80 to 0.87 for severity of pain responses and 0.89 to 0.92 for severe intrusion responses (Cleeland, 1991). I received permission and approval for the use of the Brief Pain
Data Collection/Management

This research involved an open single-blind study to prevent biases associated with enrollment and interventions (Polit & Beck, 2008). A well-designed experiment can advance therapeutic science development, diminish the risk of bias, and incorporate the bioethical principles of respect for participants. Acknowledging and protecting individuals with diminished autonomy, practicing beneficence, doing no harm by expanding possible benefits, and limiting possible harm can adequately assist scientific inquiries for researchers and study participants (Soskolne, 2016; Yip et al., 2016).

Effect Size

Effect size is the most important element of a quantitative research study. It is used to determine the effort, time, and cost substantiated by the size of the effect (Polit & Beck, 2008). The a priori sample size was calculated using G*Power analysis, revealing computation statistics for t test results (Mayr et al., 2007). I conducted power analysis calculations using Pearson’s r, which may be represented using a histogram, bell curve, scatterplot, or LOESS polynomial regressions, to determine correlations of cannabis use for pain (Degenhardt et al., 2015).

Analysis Plan and Method

The sample size included a minimum of 25 participants and was based on scheduled visits and diagnosis at the time of MCC certification renewal. Data analysis was completed in 4 weeks. Statistical analysis included demographic data using a confidence interval comparison of Likert-type responses to a written questionnaire. Statistical tools for determining validity
included calculation of the mean, standard deviation, and frequency; regression; and correlation analysis.

**Methodology Appropriateness**

I used telemedicine/telehealth to conduct in-depth follow-up interviews to determine why clients sought medical cannabis and what medical condition or problem they sought treatment for. The quantitative and qualitative surveys used contained a mixture of closed- and open-ended questions. If clients were using medical cannabis to treat chronic pain, they completed the BPI for chronic pain and medical cannabis use. Respondents used the BPI diagram to describe the location of their pain and then used a 10-point Likert scale to answer questions related to pain, activities of daily living, and personal responses to pain. Participants responded to qualitative demographic questions about fixed facts, including age, education, and sex, as well as hypothetical questions about any changes they had made to their opioid therapy due to cannabis administration and their quality of life with cannabis administration.

The use of the BPI survey in this quantitative, descriptive, correlational project assisted me in discovering frequent or common areas of pain complaints and whether medical cannabis provided pain relief with regular or daily use. Individuals who participated in the study were not deterred by any stigma related to cannabis use and were willing to use the best type, substance, or grade of medical marijuana available based on their surroundings or living arrangements and the availability of cannabis products. The benefits of this study will enlighten stakeholders, community advocates, and onlookers as to the many methods of cannabis use and peer responses as to its advantages, effectiveness, and usage. To ensure useful data, I encouraged participants to provide honest answers as well as examples of medical cannabis’s benefits, advantages, and disadvantages.
Possible problems with this study included client unwillingness to complete the study due to time constraints or lack of financial reimbursement. Illiteracy could have caused difficulty with responding to the survey. This was resolved by the primary investigator reading the questions to participants. Finally, clients’ responses may not have been honest, or clients may have rushed through surveys, providing inappropriate replies.

Feasibility and Appropriateness

The research was financially feasible due to the use of telemedicine interviews, instead of mailing surveys and questionnaires to clients, due to possible COVID-19 restrictions or problems with mail service. Incorporating medical cannabis into a daily regimen must offer a benefit to users. In the state investigated for this project, cannabis is a legal substance requiring the correct credentials for purchase and administration. Nevertheless, some might believe marijuana use is not ethically appropriate and may express doubts or stigma related to its use. Patients who seek medical cannabis certification have their own beliefs and interpretations of why medical cannabis is sought. Clients seeking to renew their certification may have strong beliefs about using medical cannabis for the relief of chronic pain. Some admitted to previously using it in the 1960s and 1970s as well as when visiting California, D.C., or Colorado. In those states, cannabis is considered recreational, and users are not required to have certification to enter a dispensary for purchase within district limits.

Medical cannabis is an expensive product, and its purchase is not covered by insurance. Therefore, recipients must pay cash for medical marijuana purchase. Individuals who use cannabis are expected to remain home for six to 10 hours and not drive or operate machinery while under the influence due to the effects on nerve and sensory fibers. When medical cannabis is used appropriately, its effects are similar, and in some cases better, than those of opioids,
based on a review of the literature (Bradford et al., 2018; National Institutes of Health, 2018; Olfson et al., 2017; Tompkins et al., 2017; Vigil et al., 2017).

With the increase in quantitative and qualitative studies of chronic pain, results suggest that clinical testing is necessary to support the use of medical cannabis for chronic pain and promote it as an effective surrogate for opioid therapy (Lucas & Walsh, 2017). Longitudinal research is warranted to establish the efficacy of cannabis and its impact as a substitute for opioid therapy and quality-of-life changes among individuals (Lucas & Walsh, 2017). The recognition and appropriateness of medical marijuana for the aid of chronic pain may also decrease the personal significance of narcotic drug intake among affected citizens (Lucas & Walsh, 2017).

**IRB Approval and Process**

Verbal telehealth/telemedicine interviews provided follow-up information as to why clients sought medical cannabis and what medical condition or problem, they sought treatment for. If clients admitted use of medical cannabis to treat chronic pain, they completed the BPI for chronic pain assessment and medical cannabis use. Respondents used a 10-point Likert-type scale and diagram within the BPI form to describe their pain location, activities of daily living, and personal responses to pain on the BPI form. The IRB approval process was completed on April 21, 2021. Clients who participated in the study also received a link to review, revisit, and examine the scholarly project and research results.

**Interprofessional Collaboration**

Completion of the study involved a team approach, with assistance from the covering office physician, manager, and ACU committee chairs. The study results will improve client care and outcomes through education on medical cannabis usage for providers and clinicians looking to support clients in their search for relief of chronic pain. Using medical cannabis has been
shown to reduce pharmacy and narcotic errors with the potential of drug overdoses. In the mid-eastern state investigated in this study, it takes 3 to 6 weeks before a client receives medical cannabis certification, thereby encouraging the use of cannabidiol (CBD, the non-psychotropic aspect of cannabis) until THC is made available. Staff involved in medical cannabis certification believe in its effectiveness and use, working diligently to assist potential clients in receiving certification and purchase of the correct cannabis product.

Practice Setting for Evidence-Based Practice

I recruited subjects who sought renewal of MCC certification through the internal medicine and concierge office. Participants in this study originally sought medical cannabis for the remedy and relief of chronic pain. Interviews were conducted using telemedicine/telehealth visits and telephone communication. The office space was well lit with natural lighting, comfortable, and private. The office area was on the third floor of a private building.

Target Population

The population consisted of adult subjects 18 years of age or older who were recipients of and participated in the MCC and who sought annual renewal after a minimum of 1 year of use. The study consisted of men and women from African American, Caucasian, and Hispanic descent. Descriptive variables and clinical attributes were determined with the demographic responses. Participants in the MCC were required to have current and valid identification to enroll in the application process. Clients who were nonverbal, clients who were under the age of 18, and clients who were unable to speak on their own recognizance did not participate in this study.
Ethical Considerations

Clients reviewed a letter from the DNP student/researcher interpreting the purpose and reason for the study. Participants were encouraged to participate voluntarily with the confirmation of informed consent. They received an explanation of the methods and details of confidentiality, anonymity, and steps taken to prevent harm. The IRB guidelines as established by ACU were incorporated and maintained during methodology performance. I avoided mistreatment of research participants and prevented psychological harm or physical exposure to eliminate fraud and deception that would result in legal and ethical dilemmas for study participants (Yip et al., 2016).

Risks and Discomforts

There were no physical risks for patient participation in this study. One potential risk for participants was the loss of confidentiality. Client names and contact information or identifiers were protected, stored, and encrypted within the computer database or removed from the database during data analysis. Data used and submitted for analysis were destroyed prior to project completion, and the survey data were not linked to the study participants. Deidentified data acquired during this scholarly project were stockpiled on a secure university drive with the project researcher’s name. The university retained documents as needed for usage at a future date. The storage program was produced by the online graduate program for doctoral student research documents and promoted by the university’s information technology division for defense purposes. The data were stored for the minimum time required according to IRB protocols.
Benefits

Clients did not receive any direct monetary compensation for participation in this study. As a participating researcher and analyst, I hoped to learn more about the incidence and study outcomes related to cannabis use. Clients who returned for recertification showed contentment with its use, effectiveness, and efficiency, as well as its convenience and effect on clients’ welfare.

Timeline

The mini timeline for baseline data collection includes pre- and postintervention data collection (Figure 1). Permission for the study location was granted before data collection began. Permission to use the BPI tool was granted before the completion of Nursing 752 in Summer II 2020. Data analysis completion and proposal writing occurred with the course Nursing 754 DNP Project II during Summer II 2021. A more detailed timeline is included in Appendix I.

Figure 1

Project Timeline
Summary

Individuals are researching and requesting a more natural method for remedying chronic pain, and medical cannabis may be the product they are seeking. With its incorporation and use among clients as a naturally occurring compound and alternative to opioid analgesics, medical marijuana is proving to be a safe and less intrusive solution for pain relief. Individuals who have incorporated cannabis into a daily ritual for pain relief report that medical cannabis helps in the relief of pain. Clients who were or are currently taking opioids report that medical cannabis administration has decreased or eliminated their opioid usage. Data collection for this study was based on the BPI.
Chapter 4: Project Analysis

The purpose of this scholarly, quantitative, descriptive, correlational DNP project was to survey patients—qualifying adults ages 18 to 80 currently using medically prescribed marijuana who participated in dispensaries in one mid-eastern state for chronic pain—regarding their pain relief with use, their use of opioids for pain management, and their overall quality of life. Following COVID-19 regulations and restrictions identified by the ACU IRB administration, I compiled data into Excel spreadsheets, analyzed them, and uploaded them to SPSS Version 27. As pain represents the most common complaint leading to opioid and narcotic use, medical cannabis is a safe and natural remedy for the relief of chronic discomfort. Continued research in the field of medical cannabis has shown that its use in a controlled medical environment will assist in alleviation of chronic pain. For this research project, I used the BPI tool to compare variables related to pain and medical cannabis use. The data analysis used in the study included frequencies, percentages, standard deviation, means, and Pearson’s $r$ probability.

Sample/Population Description

This study began on April 25 and was completed within 4 weeks with a sample of 25 participants. A total of eight clients refused to participate after further contact or after reading the consent. All participants had used medical cannabis for a minimum of 1 year and were established patients requesting recertification at the annual renewal of their certification number. Participants were asked to complete a demographic questionnaire and the BPI survey and to respond to the PICOT question, “Is medical marijuana an effective method for pain relief among qualifying adults ages 18 to 80 who participate in dispensaries in one mid-eastern state for the relief of chronic pain, as determined by a 1-year follow-up survey at recertification?” Individuals also responded to the BPI survey of how pain has interfered with or affected their quality of life.
Demographic collections included sexual identification, age, type of cannabis preference, additional use of opioid or narcotic therapy, years of medical cannabis use, and profession or highest educational level attained. Due to the COVID-19 pandemic, this study was not conducted in a face-to-face manner but performed according to ACU IRB guidelines as a telephone or telehealth interaction. Therefore, the client’s phone number was included as a patient identification number. This number was removed with the completion of raw data.

This scholarly project consisted of 25 participants, of whom 40% were female and 60% identified as male. The age of participating individuals ranged from 32 to 69. The most frequently reported age was 56 (12%), which was also the mean age of the sample. Ages 39, 55, and 65 represented 24% of the population. The educational level of participants included 20% with a high school diploma as their highest degree attained, 40% with at least some college, and 20% with a bachelor’s degree. One participant (4%) had a doctorate, and 16% had a master’s. Of the 25 participants, 14 (56%) reported using medical cannabis and/or being certified for the last 3 years, and 5 (20%) reported 2 years of use.

The use and measurement of the standard deviation shows the variance and closeness of the data compared to the mean value. I used standard deviation for the descriptive statistics of clients’ demographic responses (see Table 1 and Appendix E). Participants indulged in many medical cannabis products. When describing cannabis or THC use, 28% of participants reported using flower most frequently as the best product or “best bang for the buck,” followed by 12% reporting using gummies, chews, and edibles most frequently and 8% using flower and edibles equally. Opioid use was denied by 76% of the participants, and 16% reported using oxycodone, Percocet, or morphine, or a combination, with daily or pro re nata (prn, or when needed)
administration. Another 16% of the sample reported using tramadol, meloxicam, gabapentin, or a combination. These medications were also used in combination with cannabis (Table 1).

Table 1

_Demographic Variables_

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<td>2</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>20</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>14</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
<td>2.88</td>
<td>.971</td>
</tr>
<tr>
<td>Opioid usage</td>
<td>3</td>
<td>12</td>
<td>.68</td>
<td>1.406</td>
</tr>
</tbody>
</table>
Of the 25 participants, 11 (44%) reported having pain at the time of the consultation or research study (other than everyday minor pain such as a headache, sprain, or toothache, as described with the BPI tool). The other 14 (56%) denied having pain other than everyday pain. The locations of pain varied and included various body locations such as the neck, shoulder, biceps, cervical and lumbar areas, hips, hands/wrists, feet/toes, groin/pelvis/abdomen, lower back, knees, heels/ankles, elbows/wrists, and sciatica with radiation to kidneys and arms.

For current pain scores, which averaged 20%, with five (20%) scoring their pain 3/10 and five (20%) scoring their pain 4/10. Four (16%) scored their pain between 7 and 8/10, which is considered severely limiting of physical activity. Six (24%) of participants provided pain scoring less than 3/10. Five individuals provided pain scoring of 4/10 and 5/10. Participants scored their worst pain in the last 24 hours as follows: Five (20%) reported 5/10, five (20%) reported 7/10, and five (20%) reported 8/10. Only one (4%) reported 9/10 and one (4%) reported 10/10. Three (12%) scored their pain 6/10, and five (20%) scored their pain less than 5/10. Average pain scores were as follows: 12 (48%) reported pain scores of 3/10 or less, eight (32%) provided an average pain score of 4/10 or 5/10, and five (20%) provided a score of 6/10 or 7/10. Participants scored their least amount of pain in the last 24 hours as follows: 11 (44%) reported a pain score of 2/10 or less, followed by three (12%) with a pain score of 3/10; 10 (40%) with a score of 4/10, 5/10, or 6/10; and one (4%) with a score of 8/10, which includes physical limitations.

Responses from the BPI tool showed no statistical correlations related to pain other than everyday pain. To assess the size and direction of the relationship between the BPI variables and medical marijuana use for the relief of chronic pain, I calculated a Pearson correlation coefficient. The correlation between these variables was positive and moderate (based on distance from 0 and 1). These findings supported the hypothesis that medical marijuana provides
relief for chronic pain. The chart in Appendix E shows the average results for every question from the BPI based on the data collected using Pearson’s $r$. The listing shows correlations of pain as it related to clients’ general activity, mood, gait, normal work, interactions with others, sleep, enjoyment of life, worst pain and least pain scoring in the last 24 hours, average pain score, and current pain scoring.

The Pearson correlation coefficient is strongest when greater than 0.7. The $p$ value within this statistical analysis had a correlation significant at the .01 level. A scatterplot diagram incorporates the LOESS polynomial regression, which shows a linear correlation of fluctuating relationships among variables of the BPI tool along the $y$-axis, or $p$ value, and $x$-axis, or $r$. The LOESS regression reveals trends and cycles in analysis that are difficult to model within a parametric curve (Natrella, 2013). Therefore, this scatterplot incorporates the variables from the BPI tool, which produces a curved outcome and pattern of variance among values of the $x$- and $y$-axes.

The description of the participants’ worst pain in the last 24 hours was used in Pearson correlations with the least pain in the last 24 hours, average pain score, current pain score, pain interference in the last 24 hours of general activity, and mood. There was a statistical relationship noted between least and worst pain in a 24-hour period, average pain score, current pain score, and pain interference in one’s general activities in the last 24 hours. The Pearson correlation between current pain score and least pain experienced in the last 24 hours was negative ($r = -0.391$, $p < .027$). Mood and gait were statistically correlated based on the study responses (see Appendix E).

Pain is interpreted in different manners, as pain perception is considered a subjective symptom that is capable of triggering an emotional state encompassing the mind, body, and
spirit, which only the individual suffering from pain can perceive. Clients admitted that in the last 24 hours their worst pain interfered with normal work inside or outside the residence, demonstrating a negative correlation with pain relief \( (r = -.384, p < .029) \). By contrast, clients’ worst pain scores were positively correlated to pain interference with general activity, mood, and gait. Sleep is necessary and vital for long-term health and the recovery or rejuvenation of cells. Sleep was statistically correlated to the worst pain in the last 24 hours, average pain score, current pain score, pain interference with general activity, and mood. It is noteworthy that normal work inside and outside the home had a statistically significant correlation with pain relief in the last 24 hours and pain interference in one’s general activity, mood, life enjoyment, and gait.

When the \( p \) value is less than .05, the null hypothesis is rejected, and the variables are considered to be correlated. Client scores for pain in the last 24 hours and general activity interference showed a significant positive correlation with normal work relations with other individuals, slumber, and enjoyment of life. A participant’s mood may be influenced by the interference with general activity, normal housework inside and outside the residence, relations with others, slumber, and enjoyment of life. Participants’ ability to walk was positively correlated with their experience of pain relief in the last 24 hours \( (r = -.340, p < .048) \).

**Discussion**

All participants in this study had complaints of chronic pain relieved with medical marijuana. The location of the pain varied among individuals, as did the kind of cannabis they used. Chronic pain interfered and hindered many physical, mental, and social bonds. Data analysis for this scholarly project consisted of the use of frequencies, percentages, means, and standard deviation \((SD)\) to describe demographic variables data and Pearson correlations to
establish relationships between pain relief and the use of medical cannabis or variables from the BPI tool. The most common age among participants was 56, with a mean of 53.96. The SD with regard to age was 11.139. Participants’ mean educational level was 3.08 years of high school, with an SD of 11.198. The mean number of years of THC use was 2.88, with a low SD of .971, as the data collected tended to surround or cluster the mean.

A Pearson correlation was used to measure the strength of the relationship between two variables. In this study, I compared chronic pain to variables of the BPI tool. Participants described their least and worst pain within the last 24-hour period, current and average pain scores, and how pain affects their general activity, ambulation ability, mood, and interactions with others. Most variables showed a correlation coefficient with significance ($p < .05$; see Appendix E). In this study, I correlated results to a one-tailed $p$-value with a significance level of .05. The one-tailed test distribution provides more power to detect a one-direction effect. Chronic pain was correlated with sleep, current pain, average pain, worst pain in the last 24 hours, mood, ability to engage in normal work inside and outside the home, relationships with others, enjoyment of life, general activities, and ambulation (see Appendix E).

The PICOT question was as follows: “Is medical marijuana an effective method for pain relief among qualifying adults ages 18 to 80 who participate in dispensaries in one mid-eastern state for the relief of chronic pain, as determined by a 1-year follow-up survey at recertification?” Findings revealed that participants had experienced pain relief with the use of medical cannabis; therefore, the research results supported the null hypothesis included in this study. Zaller et al. (2015) used the BPI tool to measure pain relief from using medical cannabis and concluded that medical cannabis represented a safe alternative method for pain relief compared to opioid therapy. Reiman et al. (2017) also supported medical cannabis use, with 81%
of participants agreeing that medical marijuana was a more efficient solution for treating pain than opioid therapy. Frank et al. (2016) concluded that study findings on quality-of-life improvements were based on the HBM and medical cannabis use. Finally, findings by Piper et al. (2017) supported the high cost of cannabis due to lack of insurance coverage, the flexibility in administering medical cannabis, and cannabis’s effectiveness in relieving pain.

**Data Collection Facilitators**

Clients who requested renewal of the medical cannabis certification were established users seeking recertification. Some of the clients had been originally certified by another provider but sought renewal within the practice used in this study. All participants believed that medical marijuana aided in the relief of their chronic pain alone or with the use of other narcotics or pain relievers. Participants in the study were eager to explain to me why they chose to use cannabis and requested to review the results of this scholarly project. I was overwhelmed and excited by the opportunity to perform this study and by the support received from staff and peers alike.

Strengths of the project include the enthusiasm of participants and their request to read or receive updates on study results. The participants did not allow the stigma associated with medical cannabis to prevent them from successfully relieving their chronic pain. Clinical evidence, practice, and research results establish medical marijuana’s efficacy for therapeutic applications, dosing tolerability, and positive long-term usage. Medical marijuana is not expected to be or considered a first- or second line point of treatment. THC is considered a last-resort effort for pain relief when all else fails. Based on study results, medical marijuana usage is also correlated with improved outcomes among individuals with opioid addiction or use, though there
have been no evidenced-based studies. As an APRN, I find my ability to incorporate cannabis usage into everyday regimens for patients is greatly appreciated and respected.

Data Collection Barriers

The COVID-19 pandemic prevented face-to-face communication with all clients to obtain data and complete the surveys and applications used in this study. I resorted to telemedicine/telehealth communication as encouraged by ACU IRB recommendations and as allowed by the medical cannabis commission. Eight potential participants declined to participate due to the length of the consent form or fear of their information being leaked, or they did not return calls at the requested time.

Weaknesses of this scholarly project included the length of time needed to obtain the minimum required sample size, as some clients refused participation due to fear of their identity being disclosed. Some participants required rephrasing of the questions from the tool for better understanding. The BPI was relatively easy to use, but one question pertaining to pain relief from treatments or medications did not indicate if it applied to medical cannabis only or if other medications were included. Unfortunately, the BPI tool did not provide guidance for scoring pain on the Likert scale; therefore, participants used the Mankoski Pain Scale (see Appendix H) as a functional and subjective pain scale for scoring pain intensity and defining medical pain between 0 and 10 (Mankoski, 2000). Some providers perform medical cannabis certifications for the money but do not provide support to their clients. Few clients who were not originally certified by this provider or practice or who had returned to this practice for recertification realized the amenities, support staff, support solutions, and supporting products available with the medical cannabis program.
Implications for Practice and Future Research

The use of medical marijuana for the relief of chronic pain is a noteworthy topic and deserves more randomized controlled trials for conclusive study results. The release of study results and increased awareness about cannabis use will, hopefully, reduce the stigma attached to marijuana among communities and stakeholders. Practice implications have encouraged APRNs to endorse medical cannabis for the relief of chronic pain, and study results are encouraging regarding the use of medical marijuana for weaning off narcotic or opioid therapy, instead of simply forcing patients to choose between medical cannabis and narcotic/opioid usage. Further research on relief of chronic pain is necessary. Cannabis may have a beneficial effect on other problems, such as anxiety, insomnia, irritable bowel syndrome, attention deficit disorder, and muscle spasms, as it has been shown to have with glaucoma, seizure activity, and nausea, vomiting, and weight loss among cancer/chemotherapy patients. Long-term THC use has the potential to cause addiction, but with limitations on monthly medical cannabis allotments, practical knowledge, and information, users have decreased likelihood of becoming dependent. But this topic requires more research for validity.

According to Russell et al. (2018), future studies should also focus on methods of patient administration; identification of cannabis dosing/concentration, age, personal prescriptions, administration methods, and dosing frequency; medical cannabis types for qualifying conditions; clinical research; history of generic and synthetic THC products; and the definition of controlled products. Theories and programs of advanced practice nursing providers should be examined for perceptions of cannabis use and knowledge of patient preferences and considerations in cannabis treatment plans. Future research should focus on a working knowledge and understanding of the THC pharmacology system, perceptions, and interactions as well as the recognition of cannabis
withdrawal and signs of addiction. This knowledge should begin at the undergraduate level and advance to APRNs obtaining a working knowledge of medical marijuana programs in their state with the knowledge of practicing guidelines, principles, and policies (Russell et al., 2018).

**Summary**

The purpose of this scholarly project was to determine if qualifying individuals suffering from chronic pain received relief from the use of medical cannabis. Medical cannabis as a Schedule I product has been used and recognized for years as an aid in the relief of chronic pain. There are many theories, models, and paradigms available to examine its use and preference as a method of relief of chronic pain, but none as of yet has the backing or support of a randomized controlled study or meta-analysis. Those in support of medical marijuana are certified users within a medical marijuana program, have tried cannabis within states where it is recreationally legal, or have used or tried marijuana as young adults. Despite the stigma attached to cannabis, participants in this study agreed that medical marijuana is a natural substance or product that provides relief of their chronic pain.
Chapter 5: Discussion, Conclusions, Recommendations, and Implications

The purpose of this scholarly, quantitative, descriptive, correlational DNP project was to survey qualifying adults who were currently using medically prescribed marijuana from dispensaries in one mid-eastern state for relief of chronic pain. Participants completed a demographic questionnaire and the BPI survey and responded to the PICOT question, “Is medical marijuana an effective method for pain relief among qualifying adults ages 18 to 80 who participate in dispensaries in one mid-eastern state for the relief of chronic pain, as determined by a 1-year follow-up survey at recertification?” Individuals also responded to the BPI survey of how pain has interfered or affected their quality of life. Conducting this study during the COVID-19 pandemic was a challenge, as ACU IRB guidelines required me to abstain from face-to-face contact; therefore, I collected data via telehealth or with a phone conversation. Reading of the research consent form required consistency and precision with all clients. This meant the primary investigator could not eliminate any information pertaining to participation in the research study or change participants’ understanding of the consent.

I asked clients at the end of the certification process whether or not they would be interested in participating in this research study. It is noteworthy that participants agreed to become part of the sample group without hesitation. The BPI survey was used to measure how chronic pain affected participants’ level of pain within a 24-hour period, the location of their pain, the influences of other treatments or medications, and the general effect of chronic pain on activities, mood, gait, work inside and outside of the home, relations with other individuals, sleep, and enjoyment of life (Cleeland, 1991). There were some clients who admitted during their certification consultation that they had engaged in marijuana usage prior to receiving their
medical cannabis certification. Others admitted it was a “taboo” practice and that using medical marijuana represented their first use of the drug.

**Theoretical Framework**

The health belief model, which guided this scholarly project, is applicable to cognitive influences involved in decision-making using a self-efficacy link. Client decisions about medical marijuana involved the ingestion or use of a natural product that would subdue or eliminate the pain but not leave the client in an unreactive, unsteady, or unstable mental state. Many clients who had never before used cannabis have participated in its use with the assistance of friends, family, or research regarding the many uses and types of medical cannabis.

**Limitations to Scope of Project**

Project limitations centered on the COVID-19 pandemic and the changes it created in how the study was conducted. Per recommendations from the ACU IRB, I was unable to conduct the study interview in a face-to-face manner but instead completed them using telehealth communication. Eight participants denied participation in this study. Nevertheless, I was pleased with the support the participants provided. Due to time constraints for study completion, I purchased SPSS from an online source in order to complete the data analysis required for this scholarly project. The reading of the consent to participate in the study was very detailed and lengthy; therefore, some potential participants declined to participate. The time required for IRB approval was lengthy (4 weeks) and sometimes discouraging.

**Interpretation of Findings**

The interpretations of this scholarly project reinforced the findings from the research and literature review that medical marijuana provides relief of chronic pain. Findings from this scholarly project should be incorporated into other evidenced-based research to support claims
about medical marijuana’s effectiveness in treating chronic pain, anxiety, seizure activity, insomnia, and other chronic effects and illnesses that clients complain about. When consulting with clients about pain management, practitioners may suggest medical cannabis as an addition or alternative to narcotic administration. Unfortunately, medical cannabis is not financially feasible or appealing to people on a restricted budget, as some clients find it easier to receive insurance-supported opioid medications instead. However, the stigma surrounding medical cannabis is changing as more patients become certified to receive medical cannabis.

**Inferences of Findings**

More evidence-based research using randomized controlled studies and meta-analyses is needed to advance the use of medical marijuana. This shift in knowledge of and support for medical cannabis will produce more federal guidelines, policies, and theories of practice that encourage the use of medical marijuana for everyday health care. Recognition and use of medical marijuana for relief of chronic pain could revolutionize health care pain management plans and pharmaceutical administration and reduce opioid overdoses as well as Narcan administration.

**Implications of Analysis for Leaders**

Effective leadership on medical marijuana is based on organizational outcomes and performance. As leaders influence the organization and create positive outcomes, changes occur according to the leader’s perceptions. Transformation of certain behaviors and perceptions related to medical cannabis among leaders can encourage and empower more individuals to research and engage with medical marijuana (Madanchian et al., 2017). Findings on leader effectiveness are diverse and similar to those for subordinates, based on performance, decision-making, and leadership style. The virtuous leader can make a frail business plan successful, just
as a substandard leader can destroy even the best business plan (Madanchian et al., 2017). Scholarship and analysis can encourage the DNPs to pursue certification for medical cannabis as a way to integrate knowledge and transform and apply the latest discoveries into clinical practice (American Association of Colleges of Nursing, 2006). Maintaining a following is a reciprocal role, as one cannot be a leader without followers and one cannot be a follower without a leader (Weiss et al., 2019). As the lead investigator in this scholarly project, the DNP graduate was responsible for setting an example for participants to follow, being supportive of participants, being engaged in the analysis of the statistical data related to this scholarly project, and not being discouraged by the challenges encountered in the completion of this research project.

**Evidence-Based Practice Findings and Relationship to DNP Essentials**

The DNP Essentials represent a guide to the curricula, competencies, and education of the doctoral nursing graduate. The DNP learning and teaching strategies have been incorporated within the research design of this scholarly project. According to the American Association of Colleges of Nursing (2006), a summary of the DNP Essentials included in this scholarly project is as follows:

- **Essential I:** Preparation and education will assist and encourage the APRN to create and develop a body of knowledge and scientific fortitude surrounding the background, pharmacological usage, and benefits of use of medical cannabis.

- **Essential II:** The DNP graduate is a leader for quality enhancement and systems analysis to provide care for patient populations and patient safety using the research supporting medical cannabis.
• Essential III: Evidence-based practice for the use of a substitute for alleviating chronic pain such as medical cannabis is founded in clinical scholarship and analytical reasoning to improve health care practices and outcomes.

• Essential IV: Technology in the form of a secure website is used to transform patient guidelines and health care documents related to the use of medical cannabis.

• Essential V: The DNP promotes political activism and a commitment to engagement of policy makers, government officials, and stakeholders in an effort to influence, designate, and implement policy guidelines, forums, and boards supporting medical cannabis as a medical aid covered under insurance.

• Essential VI: The DNP functions within highly effective collaborative networks and performs central roles promoting the delivery of medical cannabis for relief of chronic illnesses and pain.

• Essential VII: Research and applications of medical cannabis are used as a means to improve clinical preventive services and population health outcomes.

• Essential VIII: The APRN promotes an increase in the knowledge, worldliness, and complexity of health care to advance new roles and competencies for the use of medical cannabis for relief of chronic pain.

Recommendations and Conclusions

The future of medical cannabis will depend on more providers becoming informed of inpatient uses for and patient preferences regarding medical marijuana, as well as clinical engagement in coursework on certification for medical cannabis. In the future, programs should focus on insurance coverage, payments, and cost of administration. As a Schedule I controlled product, medical cannabis is not considered to have acceptable medical value but presents as a
product with a high potential for abuse. Use of medical cannabis in federally funded studies is very cumbersome and dissimilar to other types of medication research, as there is additional need to establish clinical evidence, practice, and research (Russell et al., 2018). Without the use and evidence of vigorous randomized controlled trials and research using meta-analysis techniques based on clinical research and statistical recording, APRNs will face challenging obstacles and possible resistance concerning medical marijuana.

The use of medical marijuana for relief of chronic pain requires more evidence-based research for the advancement of medical and nursing guidelines as a therapeutic agent for the safe, legal, and clinical use of medical cannabis. Cannabis requires intensive research as it faces federal and governmental restrictions. These restrictions prevent beneficial and useful evidence-based research and increased cultural acceptance of cannabis (Russell et al., 2018). The hope is for a federal reclassification of cannabis, leading to more open, less limited evidence-based research on the use of medical marijuana.

Summary

The lead investigator undertook this scholarly project as a topic of interest in the workplace. As the walls and stigma surrounding medical cannabis begin to diminish, more individuals will begin to research and engage in its benefits for the relief of chronic pain. As the federal government, stakeholders, and policy makers begin to recognize the benefits of medical cannabis, more providers and APRNs will promote medical cannabis for the relief of chronic pain and engage in programs and certifications for cannabis use. It takes only one person to tell their medical cannabis success story and inspire others to follow suit.

More Americans than ever are showing support for making medical marijuana legal and requiring policies that are reasonable and humane. As more states legalize cannabis for medical
and nonmedical uses, those with medical marijuana statutes have created patient registries that protect users from arrest due to possession, and Congress has moved further toward revising cannabis’s status from a Schedule I drug to a Schedule III drug under the Controlled Substances Act (National Intersection and Interchange Safety Construction Program Act, 2021).
References


https://www.safeaccessnow.org/Maryland_medical_cannabis_laws


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5312634/


Nugent, S., Yarborough, B., Smith, N., Dobscha, S., Deyo, R., Green, C., & Marasco, B. (2018). Patterns and correlates of medical cannabis use for pain among patients prescribed long-
term opioid therapy. *General Hospital Psychiatry, 50*, 104–110.

https://doi.org/10.1016/j.genhosppsych.2017.11.001


https://www.healthypeople.gov/2020/topics-objectives/topic/substance-abuse


https://doi.org/10.1176/appi.ajp.2017.17040413


https://doi.org/10.1097/j.pain.0000000000000899


https://doi.org/10.1089/can.2017.0012


Appendix A: Health Belief Model

Note. The health belief model (HBM) was developed in the 1950s by social psychologists Irwin Rosenstock, Godfrey Hochbaum, S. Stephen Kegeles, and Howard Leventhal at the U.S. Public Health Service to better understand the failure of screening programs for individuals with tuberculosis. This model is based on the theory that an individual’s willingness to modify their health behavior is due to variables, motivation, and perceived effectiveness. According to perceived susceptibility, individuals will change behaviors if deemed at risk. Perceived severity is the probability an individual will change behaviors to avoid consequences based on how serious they consider the consequence to be. According to perceived benefits, individuals will change a behavior if it is beneficial. According to perceived barriers, changing health behaviors can create physical and financial difficulties as well as loss of time. Modifying variables, perceptions, or influences, such as the individual’s demographics, are psychosocial and structural
variables. Two other elements—cues to action and self-efficacy—reinforce what it takes to get an individual to change. Cues to action motivate a person from the desire to change. Self-efficacy examines an individual’s belief or faith in their ability to change the behavior (Rosenstock, 1974).
Appendix B: Brief Pain Inventory Tool

STUDY ID #: ___________  DO NOT WRITE ABOVE THIS LINE  HOSPITAL #: ___________

Brief Pain Inventory (Short Form)

Date: __/____/____  Time: ______
Name: ____________________________  Last  First  Middle Initial

1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these everyday kinds of pain today?
   1. Yes  2. No

2. On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.

3. Please rate your pain by circling the one number that best describes your pain at its worst in the last 24 hours.
   0  1  2  3  4  5  6  7  8  9  10
   No Pain  Pain as bad as you can imagine

4. Please rate your pain by circling the one number that best describes your pain at its least in the last 24 hours.
   0  1  2  3  4  5  6  7  8  9  10
   No Pain  Pain as bad as you can imagine

5. Please rate your pain by circling the one number that best describes your pain on the average.
   0  1  2  3  4  5  6  7  8  9  10
   No Pain  Pain as bad as you can imagine

6. Please rate your pain by circling the one number that tells how much pain you have right now.
   0  1  2  3  4  5  6  7  8  9  10
   No Pain  Pain as bad as you can imagine

Page 1 of 2
7. What treatments or medications are you receiving for your pain?

8. In the last 24 hours, how much relief have pain treatments or medications provided? Please circle the one percentage that most shows how much relief you have received.

<table>
<thead>
<tr>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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</thead>
<tbody>
<tr>
<td>No Relief</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Complete Relief</td>
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</table>

9. Circle the one number that describes how, during the past 24 hours, pain has interfered with your:

<table>
<thead>
<tr>
<th>A. General Activity</th>
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<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>B. Mood</th>
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<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
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<table>
<thead>
<tr>
<th>C. Walking Ability</th>
</tr>
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<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
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<tr>
<th>D. Normal Work (includes both work outside the home and housework)</th>
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<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
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<table>
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<tr>
<th>E. Relations with other people</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
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<table>
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<tr>
<th>F. Sleep</th>
</tr>
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<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
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<table>
<thead>
<tr>
<th>G. Enjoyment of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>Does not Interfere</td>
</tr>
</tbody>
</table>
Note. This is a condensed sample of the Brief Pain Inventory survey by Cleeland (1991). Clients respond to the BPI using a 10-point Likert scale to describe and label pain location, activities of daily living, and personal responses.
Appendix C: Consent to Participate in Study

**Introduction: The Use of Medical Marijuana for the Relief of Chronic Pain**

You may be able to take part in a research study. This form provides important information about that study, including the risks and benefits to you as a potential participant. Please listen carefully as the researcher reads the information. Please feel free to ask the researcher any questions that you may have about the study. You may ask about research activities and any risks or benefits you may experience. You may also wish to discuss your participation with other people, such as your family doctor or a family member.

Your participation in this research is entirely voluntary. You may refuse to participate or stop your participation at any time and for any reason without any penalty or loss of benefits to which you are otherwise entitled.

**PURPOSE AND DESCRIPTION:**

This research is being done to determine how medical cannabis influences pain relief and if medical cannabis influences the number of opioids (for example morphine, oxycodone, OxyContin) administered. You are being asked to take part in this study because you are someone certified to purchase medical cannabis in the state of Maryland and who suffer from chronic pain. There are no direct benefits to you for taking part in the study. Your participation will contribute to the study results and possible help for chronic pain sufferers in the future. Information gathered in this study may assist other providers, patients, and stakeholders to make decisions that could impact the future of medical cannabis in your state.
If you agree to participate, you will be asked to attend one telephone health visit with the researcher and the visit is expected to take 15-20 minutes. During this visit, you will be asked to participate in the following procedures:

The completion of the study will involve a team approach, with BPCC assistance from Dr. Charles Weng, managerial assistance from Ms. Layla Salah and ACU committee chair and members. The study results will improve client care and outcomes with the education of medical cannabis awareness and usage to other providers and clinicians looking to support clients in their search for chronic pain relief.

**RISKS & BENEFITS:**

The primary risk is breach of confidentiality, but we have taken measure to minimize this risk. This is a serious risk but is very unlikely. Those measures are described in the next section. There are potential benefits to participating in this study such as an increased understanding of medical cannabis for the relief of chronic pain.

**PRIVACY & CONFIDENTIALITY:**

Any information you provide will be confidential to the extent allowable by law. Some identifiable data may have to be shared with individuals outside of the study team, such as members of the ACU Institutional Review Board at The University, Abilene Christian has certain rules and guidelines to protect information about you. There are federal and state laws to protect your privacy.

Generally, only the people on the research team will know that you are participating in the study and will see your information-name, age, and demographic information. Other individuals associated to ACU may see or give out your information, such as the secondary or supporting investigator and other ACU staff involved in the IRB process.
We cannot do this study without your permission to use and give out your information. We will use and disclose your information only as described in this form and in our Privacy Notice Practices.

Confidentially, protection will be provided by protecting, storing, and encrypting client names and contact information or identifiers within the computer database or removed from the database during data analysis.

Data used and submitted for analysis will be destroyed prior to project completion and data surveyed will not be linked to the study participant. De-identified data acquired during this scholarly project will be stockpiled in a secure university drive with the project researcher’s name. The data will be securely stored on campus for a 3-year period following the completion of the study, and then destroyed.

CONTACTS:

If you have questions about the research study, the lead researcher is Jacquelyn Paylor, CRNP, DNP-Student and may be contacted at [Contact Information]. If you are unable to reach the lead researcher or wish to speak to someone other than the lead researcher, you may contact Dr. Lynn McClellan, Faculty Advisor, [Contact Information]. If you have concerns about this study, believe you may have been injured because of this study, or have general questions about your rights as a research participant, you may contact ACU’s Chair of the Institutional Review Board and Executive Director of Research, Megan Roth, Ph.D. Dr. Roth may be reached at [Contact Information].

328 Hardin Administration Building, ACU Box 29103
Additional Information

There will be a minimum of 25 participants enrolled in the study.

There may be unexpected risks associated with your participation in this study and some of those may be serious. We will notify you if any such risks are identified throughout the course of the study which may affect your willingness to participate. Participation is voluntary. You can leave at any time. Leaving the study will not affect your medical cannabis certification. If you would like to withdraw from the study, please tell the principal investigator, Jacquelyn Paylor, right away.

Your participation may be ended early by the researchers for certain reasons. For example, we may end your participation if you no longer meet study requirements, the researchers believe it is no longer in your best interest to continue participating, you do not follow the instructions provided by the researchers, or the study is ended. You will be contacted by the researchers and given further instructions if you are removed from the study.

There will be no cost to participate in this study.

There will be no reimbursement for study participation.

Participants may request study results with the conclusion of written study.

Please let the researchers know if you are participating in any other research studies at this time.
Participant verbal consent will be obtained during the telephone health care visit. The researcher will note that verbal consent was given by the participant over the telephone.

Researcher Notes:

Participant provided verbal telephone consent:

Yes ________ No ________
Appendix D: Patient Demographic Form

<table>
<thead>
<tr>
<th>Patient Initials</th>
<th>Gender Identity</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Phone Number

Highest Education/Profession

Type of Cannabis Preferred

Years of Medical Cannabis Use

Opioid Usage? If yes, please name.
Appendix E: Pain Correlations

<table>
<thead>
<tr>
<th>Brief Pain Inventory Tool Variables</th>
<th>R</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>current pain scoring</td>
<td>least pain in last 24 hours</td>
<td>.766</td>
</tr>
<tr>
<td>mood</td>
<td>general activity</td>
<td>.734</td>
</tr>
<tr>
<td>mood</td>
<td>relations with others</td>
<td>.676</td>
</tr>
<tr>
<td>mood</td>
<td>sleep</td>
<td>.612</td>
</tr>
<tr>
<td>gait</td>
<td>normal work</td>
<td>.707</td>
</tr>
<tr>
<td>mood</td>
<td>enjoyment of life</td>
<td>.67</td>
</tr>
<tr>
<td>gait</td>
<td>general activity</td>
<td>.515</td>
</tr>
<tr>
<td>mood</td>
<td>average pain scoring</td>
<td>.575</td>
</tr>
<tr>
<td>worst pain in last 24 hours</td>
<td>current pain scoring</td>
<td>.653</td>
</tr>
<tr>
<td>average pain scoring</td>
<td>current pain scoring</td>
<td>.671</td>
</tr>
<tr>
<td>average pain scoring</td>
<td>worst pain in the last 24 hours</td>
<td>.577</td>
</tr>
<tr>
<td>worst pain in last 24 hours</td>
<td>least pain in the last 24 hours</td>
<td>.585</td>
</tr>
<tr>
<td>least pain in last 24 hours</td>
<td>average pain score</td>
<td>.517</td>
</tr>
<tr>
<td>average pain scoring</td>
<td>general activity</td>
<td>.497</td>
</tr>
<tr>
<td>gait</td>
<td>current pain scoring</td>
<td>.485</td>
</tr>
<tr>
<td>normal work</td>
<td>general activity</td>
<td>.542</td>
</tr>
<tr>
<td>general activity</td>
<td>relations with others</td>
<td>.577</td>
</tr>
<tr>
<td>general activity</td>
<td>sleep</td>
<td>.577</td>
</tr>
<tr>
<td>relations with others</td>
<td>sleep</td>
<td>.582</td>
</tr>
<tr>
<td>life enjoyment</td>
<td>normal work</td>
<td>.496</td>
</tr>
<tr>
<td>life enjoyment</td>
<td>relations with others</td>
<td>.502</td>
</tr>
<tr>
<td>life enjoyment</td>
<td>general activity</td>
<td>.562</td>
</tr>
<tr>
<td>mood</td>
<td>normal work</td>
<td>.62</td>
</tr>
</tbody>
</table>

*Note.* This table includes the statistical results and p value of Pearson’s r.
Appendix F: Pearson’s $r$ Bell Curve

![Histogram](image)

*Note.* Histogram depiction of Pearson’s $r$ values and frequency of variable correlations from the BPI tool.
Appendix G: Pearson’s LOESS Regression

Note. Scatterplot incorporation of LOESS polynomial regression with BPI variable linear correlation of fluctuating relationships.
Appendix H: Mankoski Pain Scale

Mankoski Pain Scale
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<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Medication Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Pain Free</td>
<td>No medication needed.</td>
</tr>
<tr>
<td>1</td>
<td>Very minor annoyance - occasional minor twinges.</td>
<td>No medication needed.</td>
</tr>
<tr>
<td>2</td>
<td>Minor annoyance - occasional strong twinges.</td>
<td>No medication needed.</td>
</tr>
<tr>
<td>3</td>
<td>Annoying enough to be distracting.</td>
<td>Mild painkillers are effective. (Aspirin, Ibuprofen.)</td>
</tr>
<tr>
<td>4</td>
<td>Can be ignored if you are really involved in your work, but still distracting.</td>
<td>Mild painkillers relieve pain for 3-4 hours.</td>
</tr>
<tr>
<td>5</td>
<td>Can't be ignored for more than 30 minutes.</td>
<td>Mild painkillers reduce pain for 3-4 hours.</td>
</tr>
<tr>
<td>6</td>
<td>Can't be ignored for any length of time, but you can still go to work and participate in social activities.</td>
<td>Stronger painkillers (Codeine, Vicodin) reduce pain for 3-4 hours.</td>
</tr>
<tr>
<td>7</td>
<td>Makes it difficult to concentrate, interferes with sleep. You can still function with effort.</td>
<td>Stronger painkillers are only partially effective. Strongest painkillers relieve pain (OxyContin, Morphine)</td>
</tr>
<tr>
<td>8</td>
<td>Physical activity severely limited. You can read and converse with effort. Nausea and dizziness set in as factors of pain.</td>
<td>Stronger painkillers are minimally effective. Strongest painkillers reduce pain for 3-4 hours.</td>
</tr>
<tr>
<td>9</td>
<td>Unable to speak. Crying out or moaning uncontrollably - near delirium.</td>
<td>Strongest painkillers are only partially effective.</td>
</tr>
<tr>
<td>10</td>
<td>Unconscious. Pain makes you pass out.</td>
<td>Strongest painkillers are only partially effective.</td>
</tr>
</tbody>
</table>

*Note.* “I devised this pain scale to help me describe the subjective experience of pain in more concrete terms to my doctors and family. Please feel free to use it and distribute it with attribution” (Mankoski, 2000).
Appendix I: Project Timeline

2019-Summer I—Origination of Topic: The Use of Medical Marijuana for the Relief of Chronic Pain

04/09/20—PICOT Question and Search Strategy

04/14/20—Formation of the Project Committee

04/16/20—Approval of the DNP Project Mini Proposal

05/19/20—Training—Human Subjects Research/IRB

2020 May—Permission for Study Location

2020 May—Survey Tool and Revision Chapters 1–3

2020 June—Survey Permission Letter

06/29/20—Permission to Schedule Proposal Defense

10/15/20—Project Proposal Defense and Evaluation

12/08/20—BPI Tool License Agreement

04/21/21—IRB #21-033 Approval Exempt Category 3

04/25/21—Start of Study, Open Survey

05/25/21—End of Study, Final Survey

06/07/21—Inactivation of Current Study

07/06/21—Rough Draft—Chapters 1–5

07/12/21—Defense Copy of Scholarly Project Sent to Committee

07/12/21—Defense Visual PowerPoint Presentation Sent to Committee

07/12/21—Scheduling of Final Defense

07/12/21—Doodle Poll Final Defense

07/13/21—Doodle Poll Consensus August 5, 2021, 1400—Final Defense