ABSTRACT

THE PERCEPTION OF CANNABIDIOL USE AMONG RURAL
HEALTH PRIMARY CARE PROVIDERS

PROBLEM: Opioid related deaths have increased dramatically in the last twenty years, specifically among the rural population. Cannabidiol, or CBD, has been shown to offer benefits for pain and inflammation in a variety of routes. The purpose of this project is to determine the perception of CBD use in the management of chronic pain among rural health primary care providers.

METHODS: The project design consisted of a mixed-method qualitative descriptive study. Demographic data was obtained via an online survey, and video interviews were conducted using Zoom. Interview questions were designed specifically for this study.

RESULTS: Ten semi-structured individual interviews were conducted of family practice providers working in rural areas. Video interviews were transcribed and reviewed directly by the researcher. Data analysis identified three main themes: Providers find CBD useful; Prescribers choose not to prescribe CBD, but patients obtain CBD on their own; CBD is used by patients for pain.

DISCUSSION: Most providers interviewed have a good understanding of CBD, and do find it useful. They will not prescribe it as it has not been FDA approved. Without FDA approval, CBD is not regulated. Based on the prevalence of providers who describe positive reports from patients using CBD for chronic pain, CBD needs further research investigation and public policy discussion.

Holly Maples
May 2021

THE PERCEPTION OF CANNABIDIOL USE AMONG RURAL

HEALTH PRIMARY CARE PROVIDERS

by

Holly Maples

A project

submitted in partial

fulfillment of the requirements for the degree of

Doctor of Nursing Practice

California State University, Fresno

Doctor of Nursing Practice

May 2021

APPROVED

For the California State University, Fresno
Doctor of Nursing Practice:

We, the undersigned, certify that the project of the following student
meets the required standards of scholarship, format, and style of the
university and the student's graduate degree program for the
awarding of the master's degree.

<u>Holly Maples</u>
Project Author

Heidi He (Chair)   Nursing

Phyllis Heintz   Nursing

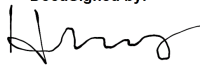Angel Cardona   Nursing

AUTHORIZATION FOR REPRODUCTION

OF DOCTORAL PROJECT

____X_____   I grant permission for the reproduction of this project in part or in its entirety without further authorization from me, on the condition that the person or agency requesting reproduction absorbs the cost and provides proper acknowledgment of authorship.

_____   Permission to reproduce this project in part or in its entirety must be obtained from me.

Signature of project author:_____

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1: INTRODUCTION

Significance of Problem

In 2017, the United States Department of Health and Human Services (HHS) declared opioid misuse a public health emergency (HHS, 2019). Opioid related deaths have increased dramatically in the last twenty years, specifically among the rural population (Rigg et al., 2018). In 2016, over 11 million Americans misused prescription opioids, and 64,000 died from drug overdoses (Collins, 2017). Opioid-related deaths among young adults ages 18 to 25 years in rural areas specifically quadrupled since 1999 (Shipley, 2019).

Opioid Use Among the Rural Community

Speculations on why the rural communities have had a greater issue with opioid-related mortalities include rural areas housing more at-risk groups such as immigrants, the elderly and military veterans, socioeconomic disadvantages including increased levels of poverty and economic insecurity (Rigg et al., 2018). Additionally, residents of rural communities more frequently work jobs requiring manual labor such as farming, construction, forestry and mining. These job types increase opportunities for injury and chronic pain, and therefore explain the increased demand for and the use of opioids (Rigg et al., 2018). According to the Centers for Disease Control and Prevention (CDC), "the rate of opioid overdoses in rural areas is affected by several factors including the number of people exposed to opioids, how many of those people become addicted and what, if any, treatment is available" (n.d., p. 1). In response to the opioid crisis, HHS encouraged evidence-based alternatives to opioids in pain management. Similarly,

National Institutes of Health supports fresh, effective, and non-addictive approaches to pain management (HHS, 2019).

**Cannabidiol as an Alternative for
 Pain Management**

Cannabidiol, or CBD, one of the more prominent cannabinoids of the cannabis plant, has been shown to offer benefits for pain and inflammation in a variety of routes, including transdermal, intranasal, and transmucosal (Bruni et al., 2018). CBD assists with pain and inflammation without eliciting the intoxicating effects of another prominent cannabinoid known as tetrahydrocannabinol (THC) (Bruni et al., 2018). CBD oils are determined to have less than 0.3% of THC at dry weight, as compared to cannabis, which may have THC levels as high as 80% (VanDolah et al., 2019). CBD has been shown to be a safe alternative to opioids because it does not include the psychoactive effects of marijuana. These psychoactive effects are what make the marijuana potent. Tweed (2019) wrote as well about its safety in comparison to opioids: "Given that CBD doesn't have the psychoactive, and potentially dangerous, effects of marijuana, it's a safe alternative to opioids and other drugs for chronic pain, including back pain, sciatica, diabetic neuropathy, and pain related to cancer and trauma" (p. 21).

<div align="center">

Problem Statement

</div>

Primary care providers in rural areas are uniquely qualified to provide insights on alternatives to opioids for pain management in rural communities. This project aims to examine the perception of the use of cannabidiol for chronic pain among primary healthcare providers in rural areas.

Population

The population of interest for this doctorate of nursing practice project is primary care providers of the rural community. The United States Census Bureau has determined approximately 60 million Americans live in rural areas (Ratcliffe et al., 2016). The demographic characteristics of the rural population place them in a high-risk category for poorer health. Regarding health behaviors, individuals in rural communities have lower levels of health literacy, limited access to healthy foods, and are less physically active (Centers for Disease Control and Prevention, 2019b). Higher unemployment rates, increased incidence of high-risk behaviors, and isolation contribute to the frequent problem of opioid and substance abuse in the rural community (Ratcliffe et al., 2016). Substance abuse is a frequent and common problem in rural areas, with limited resources secondary to fewer mental health providers and access to counseling services making it difficult to battle substance abuse (Rural Health Information Hub, 2019). In rural areas, limited access to healthcare, and low priority on health directly influence adolescents, often leading to lifestyle choices that are often not healthy or safe (Miller et al., 2018). These behaviors are examples of what contributes to the residents in rural areas being more likely to die prematurely from chronic diseases and opioid overdoses than in urban and suburban populations.

As previously discussed, rural communities are characterized by lower income levels, poverty, higher numbers of ethnic minorities, and a lack of amenities. These characteristics, along with the fact that rural healthcare personnel continue to be under-paid, deter family practice providers from seeking employment in rural areas (American Academy of Family Physicians, 2014). Those providers most likely to choose a position in a rural area are those originally from rural areas, physicians trained in osteopathic medicine, and graduates coming

from programs where training included a focus in rural health. Ultimately, studies have found that the retention of providers in rural areas is best predicted by the ability to adapt to both rural practice and rural life (American Academy of Family Physicians, 2014).

Theory

Nola Pender developed her nursing theory, the health promotion model, to assist individuals in the prevention of illnesses through positive choices and changes in behavior (Petiprin, 2016a). In the rural community, where opioid abuse and overdose is higher than in urban or suburban counterparts, the need for education regarding prevention by encouraging positive changes in behavior is essential (Centers for Disease Control and Prevention, n.d.). Additionally, in order to assist patients with behavior changes, family practice providers need to be aware of alternative pain management methods to opioids. By exploring the effects of CBD on pain, behavior changes can be initiated by both the patient, as opioid use is reduced, and provider, as alternatives are considered and suggested.

Theory Origin

The health promotion model was established by Nora Pender. As Pender observed patients with acute or chronic health conditions, she began to recognize a pattern. Health care professionals intervened in the lives of these patients only after acute or chronic health problems developed. Pender began to research other theories and models and realized that the majority of them focused on negatively motivating individuals. She then began her own theory based on positive motivation. Pender believed that health prevention was possible, and that problems could be avoided with the proper positive motivation (Petiprin, 2016a).

Theory Concepts and Definitions

      Pender's theory suggests that individual characteristics and life experiences ultimately shape past and future behaviors. There are influencers of behavior, which include biological, psychological, sociocultural, and environmental. Specifically, the social, cultural, and physical conditions in which a person lives life, as well as one's own perceptions and personal motivations define the environmental influencer (Masters, 2018). These characteristics, coupled with frequent interactions with the environment, help form the individual and direct their behaviors.

      As related to the DNP project, Pender's health promotion model will guide the motivation for positive behavior change related to chronic pain management. By introducing CBD as an alternative form of pain management, both the response by providers and the behavior related to opioid misuse of patients has the potential to change.

Purpose

      The goal of this project is to determine the perceptions providers in rural health areas have of CBD use. Primary care providers, as significant health care contacts and medication prescribers among the rural health population, have the opportunity to introduce rural residents to alternative therapies. For this reason, the main focus of this project is to assess provider knowledge of CBD.

      In an effort to promote positive behavior changes, this study begins with the knowledge and behavior the providers have toward CBD. "A health-promoting behavior is an endpoint or action outcome that is directed toward attaining positive health outcomes such as optimal wellbeing, personal fulfillment, and productive living" (Petiprin, 2016a, p 1). Family practice providers are in a position to

influence patients' health behavior by frequent interactions and encouragement, positive motivation, and education.

Conclusion

Opioid misuse and overdose are epidemics affecting multiple populations in the United States, but have an increased incidence among the rural community (Rigg, et al, 2018). Alternatives to opioids, as well as the further need for effective interventions, begs a glimpse into the literature published regarding cannabidiol, cannabidiol use for pain, and the effectiveness cannabidiol has on pain control. Information obtained has the potential to reduce opioid use among the rural population, and empower both patients and providers to regain control over both health and opioid misuse.

In the rural community, higher rates of mortality, disability, chronic health conditions, and opioid abuse are evident (Rural Health Information Hub, 2019). Working with rural providers to develop strategies that encourage positive changes in health-related behaviors would empower both patients and providers to regain control over overall health and opioid misuse. Introducing an alternative to pain management that has been found to be effective and non-addictive, such as CBD, has the potential to enhance outcomes for the rural population. Understanding how providers perceive CBD use is just the beginning.

CHAPTER 2: LITERATURE REVIEW

Given that providers have a significant influence in the care of each patient, including introducing alternative therapies for pain control, this study aims to discover the provider perspective on and knowledge of cannabidiol use for chronic pain. This information would be used to promote health behavior changes among the rural population, specifically by introducing alternatives to the use of opioids in management of pain through various routes of CBD.

Research has recently begun a focus on CBD as an alternative form of therapy for chronic pain. In order to gather information on the relevant research and acquired evidence, a literature review of CBD and its effect on pain is warranted. To follow is a review of the literature that examines the effectiveness of CBD use for pain management, patient use of CBD, and provider perspective of CBD use.

Effectiveness of Cannabidiol

Ongoing studies are evaluating and supporting the effectiveness of CBD for chronic pain. In an overview of the scientific work and distinction among CBD products, VanDolah et al. (2019) aim to assist the provider in having a better grasp on CBD and considerations if recommending its use to patients. This review examined previous studies on CBD, medical marijuana, and hemp oil. Articles with up-to-date information and relevance were analyzed. This review evaluates CBD itself: its origin, legality, concerns regarding its use, and provider knowledge. With research only recently focusing on cannabidiol specifically, there are many gaps and questions. Research has found CBD to be safe and effective. However, the Food and Drug Administration (FDA) has cautioned its use as CBD products have been found to have inconsistent levels of both CBD and THC

among products. In conclusion, CBD is a viable option for the treatment of chronic pain. However, without FDA approval, the safety of the product has been found to be inconsistent, and its safety and efficacy therefore compromised. A strength of this article is a focus on the details of CBD and its various components. A limitation is the inconclusion for providers; there appears to be no method to confidently recommending CBD at this time.

A growing amount of evidence is supporting the potential use of cannabinoids to treat pain caused from osteoarthritis. A review of osteoarthritis and the evidence of a positive outcome with the use of CBD was completed in 2018 (O'Brien, & McDougall). The variations of arthritis were discussed, as were the diversifications of CBD used to treat arthritis. Gaps identified in this review included long-term evaluation of the safety of THC and CBD product use over time. Additionally, a lack of understanding by clinicians of cannabinoid-based treatments was revealed in the review. A strength of this article is the specific consideration of the cannabinoid receptors and description of how CBD effectively works on the endocannabinoid system to enhance understanding the effectiveness of CBD. A limitation is the low number of clinical trials currently studying cannabinoid use in osteoarthritis.

A systematic review of the use of cannabinoids in pain and palliative care was performed by Hauser et al. (2017). Eleven systematic reviews were selected for further evaluation of the efficacy of CBD on pain management and palliative care. In general, findings were limited to small sample sizes, and multiple findings revealed insufficient evidence of efficacy to warrant recommendation of CBD for pain and palliative care. In countries where cannabis can be legally prescribed, providers remain unsure of the effectiveness and correct direction in prescribing cannabis. A strength of this review is a focus on the lack of research, and thereby

exposing the need for further evidence-based research. A limitation to this review is the small number of studies selected for review out of a pool of 750 originally identified publications.

A study performed by Capano et al. (2019) evaluated the effects of CBD hemp extract on opioid use and chronic pain patients. A prospective, single-arm cohort study recruited participants with moderate to severe chronic pain, and on opioids for at least 1 year. Each participant was offered a bottle of CBD soft gels. Almost all participants used the CBD soft gels. Three data collection points and measurement of effectiveness were obtained from each participant. The conclusion of the study was that 53.2% of the participants were able to reduce opioid use, with 94% of participants reporting improved quality of life, specifically related to pain, sleep, and chronic pain. A strength of this study was the multiple methods used and data measurements at several time intervals to assess and reassess for CBD effectiveness. A weakness of this study included participant reports that they did not want to inform researchers of potentially reduced need for opioids in the event that they would lose their current opioid prescription.

While the evidence of CBD effectiveness in pain control was inconclusive, animal studies have shown potential. A quantitative study aimed to determine if topical CBD reduces inflammation and pain at the joints (Hammell et al., 2016). In the study, topical CBD in different strengths was applied to the joints of rodents. Joint circumference and plasma levels of immune cells were measured to determine the level of inflammation at days 0, 3, and 7 of the study. Fifty-four rats were used according to ethical guidelines of treatment for experimental animals. The independent variable was the measure of joint inflammation. The dependent variable was the strength of CBD used on swollen knee joints. Joints were measured with a tape measure, as well as the temperature of the affected joint was

measured at the patella using a temperature probe. Pain in the rats was measured daily by joint posture scores. Statistical analysis via one-way ANOVA was utilized followed by Bonferroni post hoc analysis to determine results. The conclusion was that a consecutive daily application of 6.2mg of topical CBD reduced knee circumference. Essentially, the reduction in joint circumference indicated a reduction in swelling. At the time of the study, 21% of adults worldwide had a diagnosis of some form of arthritis. Considering this study, the daily use of CBD would potentially benefit adults with arthritis by decreasing inflammation at the joints. Further research is needed to confirm this effect on adult humans, including possibly considering an effective dose threshold and what specific joints respond to topical CBD treatment. One strength of this study is the statistical significance of the results. A limitation would be the study of just one specific joint type, as well the data obtained derived from rodents rather than humans.

A second and similar study completed by Philpott et al. (2017) tested the effectiveness of CBD on laboratory rats who had been physically manipulated to have arthritis. The aim of the study was to assess the response of rats to the CBD when the CBD was applied directly over the affected joint. The role of systemically introduced CBD in joint swelling had previously been studied and found to relieve joint inflammation. However, specific studies of the local effect of CBD had not been trialed. Data were measured by assessing behavioral pain such as the withdrawal of the hind paw, as well as by surgically analyzing the knee capsule for swelling. Results revealed that CBD can act locally to reduce joint pain. One strength of this study is the heavy focus on data and measurements to reveal physical effects of using CBD on arthritic joints. The primary limitation would be the experiment having been completed on rodents and not humans.

Patient Perspective

Laboratory studies have shown that CBD has a potential to provide effective pain relief. A survey was performed on eighteen patients who were members of a methadone/suboxone clinic and who had used opioid analgesics for a mean of 7.5 years (Elias et al., 2018). Each participant had tried using pharmaceutical analgesics, CBD oils, and smoked or used edible cannabis for pain control. The survey questioned pain levels coordinating with each intervention. The majority of individuals (62.5%) were able to replace pharmaceutical analgesics for CBD-THC oils. The overall conclusion was that CBD-THC oils reduced pain more effectively than pharmaceutical analgesics. A gap exposed from this study is that most patients are unclear on the difference between CBD and THC. One strength of this study is that the participants had used similar high-potency pharmaceutical analgesics for pain. Limitations to this study include the small sample size and the self-reporting survey, which does not allow for the generalization of reports.

One study analyzed was a qualitative study on patient attitudes toward alternative pain management (Beede, 2018). This article is beneficial to this DNP project as CBD is an alternative form of pain management. Gaining an understanding of the general patient response to alternative pain management approaches will assist in determining patient response to the potential application of the DNP project based on evidence-based findings. The study of the patient response to alternative therapy was initiated as opioid intervention has decreased and people with chronic pain have had to turn to alternatives to manage pain. Qualitative thematic analysis was used to identify themes in attitudes related to the use of alternative pain management. Alternative therapies included CBD, physical therapy, acupuncture, homeopathic remedies, and therapeutic massage. Seven

adults with chronic pain were selected and interviews were conducted of their journey with chronic pain and finding pain relief. Based on the results of this study, the attitude towards alternative pain management is mostly positive (Beede, 2018). Specifically, the use of cannabis was said to aid with pain control, thereby allowing participants the opportunity for sleep. Gaps identified include an underrepresentation of literature on the patient perspective of alternative therapies for pain management. A strength of this study is a sample population with similar prescription pain medication history, thereby allowing results of various alternative therapies to additionally be compared among a population with a similar history. A limitation would include the small sample size.

A different angle to view the use of cannabidiol was performed via a cross-sectional study in 2018 (Corroon & Phillips). A sum of 2409 individuals was recruited from social media sites. These individuals were instructed to complete an online survey answering questions that would determine who, how, and why individuals are using CBD. Conclusions included 62% of individuals using CBD for three primary medical conditions: pain, anxiety, and depression. Nearly 36% stated CDB treated their condition "very well by itself." Only 4.3% reported that CBD did not treat their condition well. One-third of users reported a side effect that was not serious. A strength of this study includes the geographic representation. One limitation would be the population of CBD users who do not use social media not represented in the study.

Provider Perspective

A team of researchers performed a group of studies examining the knowledge patients, providers, and pharmacists have of CBD (Elias et al., 2019). These studies recruited patients from methadone and suboxone clinics, asking

about the level of knowledge each patient had of CBD, if CBD had ever been used by the individual, and if they were aware of the chemical components of CBD. Similarly 53 professionals were recruited to answer questions via an online survey regarding use and adverse reactions of CBD as compared with other medications. Findings included those who use CBD had more knowledge of the side effects than non-users. However, only 52.4% properly understood the differences between THC and CBD, and the respective mental response to each component. The study among health care professionals revealed a positive view on the use of CBD, and most reporting an understanding that fewer adverse effects exist with the use of CBD than other medications. The gap revealed is the unfamiliarity with the components of cannabis, mainly CBD and THC. One strength of this study is the inclusion of two areas of expertise among health care professionals, both of whom consult with patients regarding medications. One limitation is the survey for health-care professionals may have attracted only those studying and familiar with CBD as opposed to randomly selecting participants.

In order to determine the attitudes, beliefs, and knowledge providers have about medical cannabis, one study performed an electronic survey to gain information (Philpot et al., 2019). Sixty-two providers responded to the survey. The researchers found that one half of the providers were not prepared to answer the questions patients had about medical cannabis. However, three-quarters of the providers were interested in learning more about medical cannabis. The conclusion was that there exist significant provider knowledge gaps about the effectiveness of cannabis, adverse effects of cannabis, and the drug interactions with cannabis. One strength of this study is the exploration and successful finding of provider gaps regarding medical cannabis. One limitation of this study in the

perspective of this DNP project is that the primary care providers surveyed were from a large metropolitan healthcare system (Philpot et al., 2019).

Conclusion

Ultimately, the theme among the literature is that the number of available studies on cannabidiol and its efficacy, safety, and long-term impact is too small to confidently recommend its use. Further study is needed to assess true adverse effects, long-term efficacy, and regulation is needed to assure the chemical composition of CBD is generalized for the safety of the population. Nonetheless, patients and studies have found CBD to be effective in reducing pain and swelling. The gap in knowledge providers have about CBD may initiate further studies and consideration of the use of CBD.

CHAPTER 3: METHODOLOGY

What is known from the reviewed literature is that patients report relief of pain with the use of CBD. Animal studies have shown physical reduction in swelling related to use of CBD with joint pain.

Given that cannabis has not been legalized for use federally, and remains a schedule I drug, there were no large, randomized-controlled trials that have been completed on humans that were found. Similarly, studies specifically related to the perception of providers in rural communities where the opioid crisis is a greater problem were not located.

Research Question

The research question to consider is what is the rural health provider's perspective of CBD use for pain management?

Hypothesis

The expectation is that a provider who is well-educated on the indication for, adverse effects of, and outcomes with use of CBD for pain management, along with an open-mind to the use of alternative therapies for pain management, including CBD, would increase the likelihood of recommending CBD for use with chronic pain. With less knowledge of CBD, the expectation is that providers would be less likely to use this alternative form of pain management.

Purpose of Project

The purpose of this project is to determine the perception of CBD use in the management of chronic pain among rural health primary care providers.

Method

The project design was a mixed method qualitative descriptive study, with some interview questions quantitative in nature. Interviews were conducted with a target of 10 family practice providers working in rural areas. These providers were selected randomly by contacting rural family practice clinics and offering an opportunity to set an appointment for the interview. Additional methods were referrals or snowball sampling to identify additional providers who meet the criteria for the interview.

Prior to the interview, a survey was sent to the provider as created with the survey instrument SurveyMonkey. This survey included a consent form, giving the interviewee the option to approve the interview process, recording, and use of responses. If the provider refused to sign the consent, they were not be permitted to participate in the interview. Additionally, demographic information was obtained including gender, ethnicity, age, type of provider (MD, DO, PA, or NP), and years of experience working as a provider.

Providers were then contacted via a video call using the instrument Zoom to conduct the semi-structured interview. After obtaining consent, the interview was audio recorded for transcription into a Word document for future reference. Pre-established questions were asked to each provider verbally to allow for an expanded response. The interview questions were designed specifically for this study, and were validated and revised based on feedback from content experts.

Questions asked include the following:

1. How often do you manage chronic pain in your practice?
2. When managing chronic pain, how often are opioids used?
3. How frequently do patients with chronic pain ask you about alternative approaches to pain management?

4. How frequently do patients ask about cannabidiol (CBD) as an alternative approach?

5. Do you routinely screen for CBD use? If so, how do you account for this in your treatment plan?

6. What are your perceptions of CBD use for pain management?

7. On a scale from 0 to 5, with 0 being not at all comfortable, and 5 being very comfortable, how comfortable are you with answering questions regarding CBD?

8. Are you familiar with the differences between CBD and THC?

9. Do you treat patients with CBD? If so, by what route (ointments, topical, spray, drops, edible)?

10. What type of patients do you see more likely to use CBD for chronic pain management?

Subjects

The study participants for this project included primary care providers, specifically physicians, physician assistants, and nurse practitioners who work in a rural health area of California. Participants participated in a brief demographic survey followed by a video-interview. Interviews continued until the point of saturation was reached.

Inclusion criteria included participants who working with the rural health population in California, who, as part of their practice, saw adult patients in chronic pain, were open to alternative pain management therapies, and who consented to a video interview. Exclusion criteria included participants not serving adults, patients with chronic pain, or residents of rural areas, specialty providers including pediatrics, and those not willing to conduct a video interview. Problems

anticipated include the inability to find 10 providers who met the inclusion criteria for an interview.

Data Analysis

The qualitative data were analyzed using a conventional content analysis approach in order to organize, review, and find themes among data. Data analysis was performed in four stages: decontextualization, recontextualization, categorization, and compilation (Bengtsson, 2016). Analysis was performed from an objective and neutral perspective to assure reliability.

Limitations

A potential limitation of this project was the sample size of providers due to a lack of response or interest in the interview. Additionally, without the federal legalization of cannabis, providers generally may not have been open to discuss CBD as an alternative option for pain control.

Anticipated Clinical Implications

With the increasing concern of opioid use among the rural population, as well as the legalization of cannabis in California and the use of CBD specifically, this project has the potential to be valuable on multiple levels. Should the incorporation of CBD reduce the need for opioids, there is an opportunity to educate the rural population and rural providers to consider CBD for chronic pain management, and therefore further work to reduce opioid use among the rural population. This can prove beneficial if nurses can assist in the prevention of early recognition of opioid abuse. Advocating for patients who have a chronic pain disorder, who could benefit from changes to pain management and use of

alternative therapies, can encourage an intervention that may ultimately save a patient's life.

Potential Benefits

For participants, this project can contribute knowledge and awareness that the providers can then apply to their practices. Additionally, it can encourage a desire to learn more about alternative pain management, specifically CBD and its potential use in chronic pain management. This knowledge can be relayed to patients who may also consider alternate therapies to chronic pain management.

As the knowledge is shared, there is potential that alternatives to opioids in the use of chronic pain among the rural population specifically will improve the quality of life of those living with chronic pain. If CBD use has a potential to safely reduce pain, and thereby reduce opioid use in the rural health community, providers will be moving in a positive direction. Each step to bring awareness of safe alternatives to opioids will more quickly end the opioid epidemic.

Potential Risks

Overall, the potential risks of the project were minimal. Psychological risks included the possibility that the providers would take offense to the consideration of CBD use or to the questioning of chronic pain management in their practices. In addition, the interview process via Zoom may have caused some providers anxiety and stress. Social risks to consider would have been the embarrassment or even shame of the provider if he or she does not have knowledge about CBD or alternative forms of pain management, thereby altering their confidence in practice. Physical risks may have included eye strain from looking at the screen during the interview. Economic risks may have included the loss of revenue during the time of the interview; the interview may interfere with the provider's

normal routine or with patient care. Legal risks would have included the mishandling of data, including violation of privacy of the written consent. Violations of normal expectations would have included the mishandling of data, including violation of privacy of the written consent. Should a problem identified as a risk occur, participants will be encouraged to contact the primary investigator via a provided email address.

<p style="text-align:center">Precautions Taken to Minimize Risks</p>

In order to minimize the psychological and social risks associated with the study, precautions will be taken to assure sensitivity to the participant during the interview process. A disclaimer will be made allowing the participants to withdraw from the study at any time should the participants feel stressed or uncomfortable, without any questions from the investigators. In order to minimize potential physical and financial risks associated with study, the interview will be well-organized and limited to 20 minutes in duration so as to limit exposure to the computer screen and time spent away from revenue generating tasks. The data obtained from both the electronic survey and the Zoom recorded interview will be stored in a file on a password-protected computer. The only person with access to the computer is the researcher herself. Each participant will be assigned an identification number in order to ensure privacy and confidentiality. All data obtained will be stored on a password protected laptop that is for personal use, and stored in an at-home office. There will be no paper data obtained for this project. Once the project is completed, and the data is no longer needed, the file of information will be held for six months. After this time, all data will be eliminated, permanently deleted from the hard drive of the personal computer where it was

stored. These safeguards will assist with reducing legal risks and violations of normal expectations.

Compensation of Subjects

There will be no compensation for subjects in this study.

Consent

A brief statement will be issued to obtain the consent of the participant to voluntarily participate in an interview, and to permit information obtained to be used for the project. This consent will be sent to each participant electronically prior to the interview. The interview will not be conducted if there is no signed consent. Please see attached consent form (Appendix A).

Introductory Statement

An introductory statement will be provided to each potential participant briefly discussing the purpose, methods, and selection criteria for the study. Please see the attached Introductory Statement that will be sent to participants (Appendix B).

Instruments

An introduction letter along with a survey link via SurveyMonkey will be sent to each participant who plans to interview for this study. As previously listed, ten prepared questions have been created to ask each participant during the interview. Please refer to the attached survey sample (Appendix C).

Approval from Participating Institution

This study was approved by the Institutional Review Board (IRB) at California State University, Fresno.

CHAPTER 4: ANALYSIS

As previously mentioned, the purpose of this study is to examine the perception, understanding, and knowledge rural health primary care providers have of CBD. Participants from this study were selected from primary care settings in rural areas. Each participant confirmed they are currently practicing in the state of California, regularly see adult patients, do see patients with chronic pain, and are open to the use of alternative therapies. No minimum time in practice was required to participate in this study. A total of ten providers participated in the study. Each provider electronically consented to participate.

Methods for Data Analysis

Demographics

Demographic data were collected via an online survey. Participant demographic information collected included gender, ethnicity, age, credentials, and years of experience working as a provider. Of the ten participants, 70% were females and 30% were males. Eighty percent of the participants identified as White or Caucasian, 10% as American Indian or Alaskan Native, and 10% as Hispanic or Latino. Ages varied with 10% between 25 to 34 years old, 50% between 35 to 44 years, 10% between 45 to 54 years, 10% between 55 to 64 years, and 20% over 65 years of age. Of these participants, most (90%) were nurse practitioners and 10% were credentialed as a doctor of osteopathic medicine. Most of the providers interviewed (60%) had 1 to 5 years of experience, 10% with 11 to 15 years of experience, and some (30%) with greater than 16 years of experience. Table 1 shows the demographic results produced from the online survey.

Table 1

Demographics

SURVEY PARTICIPANT DEMOGRAPHICS		
	Frequency (N=10)	**Percentage**
Gender		
Male	3	30%
Female	7	70%
Ethnicity		
American Indian/Alaskan Native	1	10%
Asian/Pacific Islander	0	0%
Black/African American	0	0%
Hispanic/Latino	1	10%
White/Caucasian	8	80%
Prefer not to answer	0	0%
Other	0	0%
Age		
25 to 34	1	10%
35 to 44	5	50%
45 to 54	1	10%
55 to 64	1	10%
65 and older	2	20%
Credentials		
MD	0	0%
DO	1	10%
PA	0	0%
NP	9	90%
Years of experience		
Less than 1 year	0	0%
1-5 years	6	60%
6-10 years	0	0%
11-15 years	1	10%
Greater than 16 years	3	30%

Interviews

Semi-structured interviews were conducted to identify provider perception of and familiarization with CBD use. Multiple themes and categories were identified from the data obtained through these interviews. Content analysis was used to analyze the qualitative data obtained from the semi-structured interviews

(Bengtsson, 2016). Analysis was interpreted from an objective and neutral perspective to assure reliability. Video interviews were transcribed directly by the researcher, and the interviews and transcripts reviewed multiple times to ensure accuracy and to consider participant emotions, tone, and non-verbal communication (Anderson, 2010).

Familiarization with the data was achieved after reading through and comparing the transcripts with the recordings several times. The transcripts were then read through, comparing each of the responses to the same question among the ten participants. An understanding of the main points was obtained, which facilitated the identification of themes. From the main themes, responses were broken down into smaller units of meaning (Bengtsson, 2016). Each of these meaning units was identified by highlighting passages within the transcripts. From these meaning units, codes, and brief explanation of the codes, were created to identify and correlate patterns in findings. These codes were marked on a separate page and organized into similar groupings.

With the list of meaning units on one side, the transcripts were re-read using colored pencils to underline the meaning units of each response in the transcript. Unmarked text was reevaluated and either included for analysis or excluded from further evaluation. After meaning units were confirmed, they were further condensed in order to create categories.

A second reader reviewed the data in order to examine reliability and trustworthiness. This reader reviewed the data, which contained no identifying information, and discussed her findings. With the aid of this second reader, themes and categories were confirmed, and not met with disagreements. Data saturation was confirmed via recurring themes, and guidance was provided as themes were both confirmed and further identified.

Thematic Development

Data analysis identified three main themes and categories. One identified theme was that providers find CBD useful, with categories of treatment, route, and type of patient. A second theme identified was that prescribers choose not to prescribe CBD, but that patients obtain CBD on their own. Categories included provider screening habits and provider comfort level with CBD. The third theme identified was that CBD is used by patients for pain. Categories included pain management, opioid use, and alternative therapies. The themes, categories, and finding derived from data analysis are as follows.

Theme #1: Providers Find CBD Useful

The perception of the majority of participants regarding CBD use is that they will consider suggesting it and find it useful. They recommend use in the topical or oral routes, and have found that female patients over the age of fifty with joint pain are more likely to use CBD.

Treatment

Participants discussed the potential benefits for patients and often recommended CBD to their patients. Participant 05 offered, "I think it is a fantastic alternative…especially compared to opioids, and so I try to encourage people, patients, to look into those." Participant 06 noted, "I think CBD has a lot of benefits that aren't well-researched at this time, but I am very open to using this therapy." Participant 07 remarked, "I recommend it for people who want to avoid oral pain medication."

Route

More than half of the participants do not treat with CBD, but would suggest CBD by the topical or edible routes. The remaining participants stated they do

not recommend CBD for use in any form or route. Participant 06 stated, "I have offered patients the therapy of using CBD by ointment or cream." Participant 08 advised, "when I suggest that they might try it I always go with topical first, and if that doesn't work I suggest gummies." Participant relayed, "I am in favor of the topical form." Participant 04 was more skeptical about advising, "I do not recommend it."

Type of Patient

The most reported patient population participants see using CBD for pain are older and female patients with joint pain and arthritis. Participant 01 observed, "I would say women ages 50 to 65 who are starting to have arthritis and joint pain and are asking for something more that could help with the pain." Participant 02 stated, "I think most common is people with joint pain." Participant 04 noticed, "most of my patients are bone-joint pain." Participant 08 remarked, "older patients"

Theme #2: Prescribers choose not to prescribe; rather, the patients obtain CBD on their own.

Participants did not have a specific method for screening for CBD, rather included screening for CBD with other substances, or did not screen at all. Participants reported they are very comfortable answering questions regarding CBD, and unanimously understand the differences between THC and CBD.

Screening

An equal number of providers screen and do not screen for CBD. Responses included not screening at all, screening with drug and alcohol use, and screening every patient. Participant 01 reported, "yes, along with alcohol, smoking, etcetera." Participant 06 relayed, "I do not routinely screen for CBD."

Participant 07 stated, "I typically ask a new patient if they use marijuana, but don't typically inquire on CBD use."

Comfort Level

The comfort level providers have of answering questions regarding CBD is comfortable. A scale was provided to participants from 0 to 5, with 0 being not at all comfortable and 5 being very comfortable. The mean response from participants was 4.0. Additionally, 100% of all participants said they were familiar with the difference between CBD and THC.

Theme #3: CBD is Used by Patients for Pain

According to participants, pain is managed in their clinical practice more than half of the time, with opioids rarely to never being prescribed to manage pain. Patients ask about alternative therapies frequently.

Pain Management

One essential category that was determined from the transcript analysis was that pain is managed often or frequently by providers. The majority of responses from participants were daily, more than half of the time, and too much. Participant comments on frequency of pain management are as follows. Participant 03 stated they manage pain in their practice, "I would say over 50%, between 50 to 75%." Participant 06 noted, "on a daily basis." Participant 09 reported, "too much."

Opioid Use

According to the participants, opioids are rarely to never used in pain control. Participants frequently reported rarely and never using opioids to manage pain in their practices. Participant comments on the use of opioids include the

following. Participant 01 stated, "I never prescribe opioids." Participant 02 replied, "very rarely, maybe 1%." Participant 10 said, "rarely."

Alternative Therapies

According to the data, patients ask about alternative forms of pain medication frequently. Responses included half of the time, frequently, and always. Patients rarely to never ask about CBD as an alternative form of pain therapy. Participant 01 stated patients ask about alternative therapies, "frequently, at least once a day." Participant 02 said, "100% of the time." Participant 03 remarked, "always." Participant 06 elaborated, "I would say 50% of the time patients want to know about a different way of prescribing medication that does not include opioids…patients very rarely ask me about CBD." Regarding CBD use, Participant 09 responded, "I would say they never ask."

Concluding Comments

The responses obtained through participant interviews provided the foundation for gaining insight into the perspective providers have of CBD. Some of the responses correlated with the current literature, and others went against the present findings. In the upcoming chapter, the links between the findings of this study and the current literature will be discussed.

CHAPTER 5: DISCUSSION AND CONCLUSION

This study aims to determine the perception of the use of cannabidiol for chronic pain among primary healthcare providers in rural areas. Opioid related deaths have increased dramatically in the last 20 years, specifically among the rural population (Rigg et al., 2018). CBD has been shown to offer benefits for pain and inflammation in a variety of routes (Bruni et al., 2018). Gaps in research include an insufficiency in provider knowledge and understanding of CBD and its differing components (Philpot et al., 2019).

Interpretation of Findings

The uniqueness of this study is that there has been no research exactly like it found in the literature. One study examined provider knowledge of cannabis in metropolitan areas, but not specifically rural areas (Philpot et al., 2019). Residents of rural areas have been found to have more opioid overdoses than their urban counterparts, and are more likely to be prescribed opioids by their providers (CDC, 2019). This discussion will include findings that are both consistent with and contradictory to prior research, as well as add to areas of literature where gaps currently exist.

CBD is Used by Patients for Pain

Pain Management

The responses participants provided related to CBD use for pain management were largely positive. Responses indicated that patients use CBD to manage pain, and that most providers believe it does assist with pain relief. This theme reflects current research that CBD is frequently being used for pain by patients (O'Brien, & McDougall, 2018). Research shows that patients report CBD

has treated their condition alone 36% of the time (Corroon & Phillips, 2016). Studies involving rats have shown CBD is effective for joint pain management (Hammell et al., 2016). With the positive response from providers, and the report that people are using CBD for pain, the need for more research on CBD specifically as it relates to human pain is reinforced. There have been studies focused on THC, but not CBD specifically (Boyaji et al., 2020).

Another interesting finding from this study specifically related to pain is that participants stated they manage pain often or frequently. Yet, many participants reported referring to pain specialty for pain management. It may be that primary care providers (PCPs) are not managing pain as much as they think they are. Additionally, if PCPs are managing patients for their pain regularly, then it seems providers should be proficient and confident to manage pain. The question may then be why are PCPs referring to pain specialty? One recent study reported 37.5% of PCP appointments were related to pain management (Upshur et al., 2006). This same study also found that both providers and patients found low satisfaction in delivering and receiving interventions for chronic pain. Providers requested additional training on managing pain, and more education on opioid addiction (Upshur et al., 2006). Pain management appears to be an area that would benefit from further study.

Opioid Use

The majority of providers stated they rarely or never prescribe opioids to manage pain. Yet, the literature shows that residents in rural areas had an 87% greater chance of being prescribed opioids than in urban areas (CDC, 2019a). The question is then what are providers prescribing for pain if not opioids? Three participants reported referring patients with chronic pain to a pain management

specialist, but there was no follow-up question asked that would identify what providers are then doing for pain. Additionally, if opioids are not being used, options for pain management are needed in primary care, of which CBD has the potential to be one such option. It is possible that country-wide efforts to spread awareness of the opioid crisis have been effective in rural communities (Health Resources & Services Administration, 2019). Further study would be helpful in testing this assumption.

Alternative Therapies

Participants report that patients frequently ask about alternative therapies for pain. This finding reflects current research that patients with chronic pain have had to turn to alternatives to manage pain (Beede, 2018). CBD specifically is being used by patients for pain as an alternative therapy (O'Brien, & McDougall, 2018). There remains, however, an underrepresentation of literature on the patient perspective of alternative therapies for pain management. (Beede, 2018).

Treatment

Most providers who acknowledged they would not prescribe CBD did say that they find it to be useful. Minimal research is available on provider perspectives, however one article found that providers do have a positive view on the use of CBD (Elias et al., 2019). If more studies are performed, and evidence is produced to confirm the safety and efficacy of CBD, perhaps the majority of providers would support its use as an alternative for pain control. As one participant stated, "I think CBD has a lot of benefits that aren't well-researched at this time, but I am very open to using this therapy." The Food and Drug Administration (FDA) has cautioned its use as CBD products have been found to have inconsistent levels of both CBD and THC among products (VanDolah et al.,

2019). Without FDA approval, the safety of the product has been found to be inconsistent, and its safety and efficacy therefore compromised. Resolving this issue could encourage providers to consider prescribing CBD for their patients.

Route

The data obtained in this study revealed most patients use CBD in topical and edible forms; topical, in the form of creams, or edible, in the form of gummies. The literature primarily identifies CBD use in the form of oils and creams. In one study, CBD-THC oils reduced pain more effectively than pharmaceutical analgesics (Elias et al., 2018). A study on rodents found that the consecutive daily application of 6.2mg of topical CBD reduced inflammation of the knee joints (Hammell et al., 2016). With the various routes available for use, there is a significant gap in the literature about the effectiveness of each route, including gummy form.

Type of Patient

Women between ages 50 to 65 years as well as older patients of both genders were identified in this study as those who use CBD for chronic pain. Arthritis and joint pain were the primary types of pain noted by patients who used CBD. One provider also noted that patients use CBD for sleep issues. It is interesting to mention that only one participant stated CBD use for cancer-related pain. This may be because the specific participants in this study did not manage cancer or cancer-related pain. This finding partially supports one study that found significant cancer-related pain relief was achieved through a CBD-THC combination (Blake et al., 2017). The literature does reveal arthritis and joint pain relief in rodents specifically (Philpott et al., 2017). However, most literature

reports CBD use in generalized chronic pain of adult patients of all ages, as well as for anxiety and depression (Coroon & Phillips, 2018).

Prescribers Choose Not to Prescribe; Rather, the Patients Obtain CBD on Their Own

Participants largely relayed in the interviews that they are not in position to prescribe, or would not prescribe, CBD, but that patients who use CBD obtain it on their own. The roadblock to overcoming the provider's reluctance to prescribe CBD remains that without FDA approval of CBD, there is no assurance of additional contents and their respective levels, mainly THC. One participant commented that they "educate patients about the potential for THC to be present" in different products. Patients are obtaining CBD from a variety of locations, with perhaps various levels of THC. This makes it difficult to trace the effectiveness of CBD itself by mere patient report as the CBD used may have differing levels of THC. This is a finding that supports the current literature (VanDolah et al., 2019).

Because CBD remains a schedule I drug, randomized controlled studies cannot be performed on humans. The research that has been published is anecdotal and qualitative, or was performed on animals, not humans. If decriminalization of cannabis were to be determined at the federal level, research could begin on humans. Should the anecdotal evidence match the quantitative findings, CBD could be approved by the FDA for use, with an effective dose determined for prescription. Until these changes take place, the ability to prescribe CBD remains restricted.

Screening

The majority of providers who did state they screen regularly for CBD use screened under the umbrella of cannabis. This would give reason to consider that

there is still some level of question regarding the understanding providers have of the differences between CBD and THC. No literature on screening specifically for CBD was identified. This is a gap that may be important to consider for further study.

Comfort Level

The comfort level expressed by providers in this study differs from what is found in the literature. The participants in this study were largely comfortable with answering questions about CBD. All participants reported an understanding of the differences between THC and CBD. According to a study focusing on the knowledge providers have of CBD, only about half of the responses portrayed proper understanding of the difference between CBD and THC (Elias et al., 2019). Prior research (Philpot et al., 2019) has also confirmed that there are gaps in the knowledge providers have of cannabis. Interestingly, one study found that the majority think that they have sufficient knowledge of cannabis and cannabis-based therapies, but overwhelmingly indicate a need for further education (Szaflarski et al., 2016). In retrospect, a follow-up question requesting the participants specific understanding of the difference would have been helpful to determine if participants truly do understand the difference, or if there is a lack of clarity. Additional considerations may be increased familiarity with cannabis as it is legal in the state of California, where each participant currently works as a provider, or an increase in exposure to cannabis in the rural health primary care setting.

<center>**Limitations**</center>

There are limitations to this study. The majority of interview questions were designed to be open-ended and based on opinions of the participants. This limits the ability to make objective conclusions in a qualitative study, but helps

establish the ground work for future quantitative studies. Additionally, this study had a narrow group of practitioner credentials; mainly nurse practitioners participated in the interviews; only one doctor of osteopathic medicine was represented, no physician assistants and no medical doctors were represented in this study. Findings cannot be generalized to all prescribing providers.

Reflecting on the findings and results of previous studies, it would have been appropriate to include a question specifically about the participant's interest in learning more about CBD into the interview questions asked in this study. The data collected from this study was from a small sample size appropriate for a qualitative study. Although data saturation was achieved, the sample size was small at ten participants. Larger sample sizes in future studies could expand understanding of the patient and provider experience with CBD. Lastly, this study focused on primary care providers in rural areas. While the data obtained is limited to rural providers, the need to further study the perceptions providers have of CBD is essential as patients report use, and in an attempt to find alternatives to opioid therapy for pain management.

Recommendations for Future Research

The findings from this study reveal the need to focus on research of CBD alone as used for pain. Specifically, CBD use for joint pain in humans would be essential to compare with previous findings from studies based on rodents. CBD screening protocols are not readily found in the literature, and could prove beneficial for primary care providers. This is a gap that needs further studying. Finally, further investigation of the gaps in provider knowledge will provide significant guidance for provider education. This may include topics such as if providers are more aware of treatment using CBD are they then more comfortable

with treating, the view of CBD use from the holistic provider perspective, and understanding the perspective of cannabis use among urban as compared to rural health providers.

Closing Comments

This study fills a void in the current research regarding provider perspective of CBD use, specifically among the rural health population. Based on the prevalence of providers who describe patients self-reporting use of CBD for treating chronic pain and sleep issues in this study, CBD needs further research investigation and public policy discussion. Findings identify areas where further research would be beneficial to both providers and patients.

REFERENCES

REFERENCES

American Academy of Family Physicians. (2014). *Rural practice, keeping physicians in* (position paper). https://www.aafp.org/about/policies/all/rural-practice-paper.html

Anderson, C. (2010). Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education 74*(8), https://www.ajpe.org/content/74/8/141.full

Beede, M. (2018). *Patients attitudes on alternative approaches to chronic pain management*. University of Southern Maine Digital Commons.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open 2*, 8-14.

Blake, A., Wan, B. A., Malek, L., DeAngelis, C., Diaz, P., Lao, N., Chow, E., & O'Hearn, S. (2017). A selective review of medical cannabis in cancer pain management. *Annals of Palliative Medicine*. https://cowardoncology.thrivex.io/wp-content/uploads/2018/01/Cannabis-and-pain-relief.pdf

Bruni, N., Pepa, C. D., Oliaro-Bosso, S., Pessione, E., Gastaldi, D., & Dosio, F. (2018). Cannabinoid delivery systems for pain and inflammation treatment. *Molecules 23*(10), 2748.

Boyaji, S., Merkow, J., Elman, R. N. M., Kaye, A. D., Yong, R. J., & Urman, R. D. (2020). The role of cannabidiol (CBD) in chronic pain management: an assessment of current evidence. *Current Pain and Headache Reports 24*(4). https://link.springer.com/article/10.1007/s11916-020-0835-4

Capano, A., Weaver, R., & Burkman, E. (2019). Evaluation of the effects of CBD
hemp extract   on opioid use and quality of life indicators in chronic pain
patients: a prospective cohort study. *Postgraduate Medicine 132*(1), 56-61.
https://www.tandfonline.com/doi/full/10.1080/00325481.2019.1685298

Centers for Disease Control and Prevention. (n.d.). Preventing opioid overdoses in
rural America. *Rural Health Policy Brief*. https://www.cdc.gov/ruralhealth/
drug-overdose/pdf/Policy-Brief_Opioid-Overdoses-H.pdf

Centers for Disease Control and Prevention. (2018, Jan 29). *Social determinants of
health: know what affects health*. https://www.cdc.gov/socialdeterminants/
index.htm

Centers for Disease Control and Prevention. (2019a). Opioid prescribing rates in
nonmetropolitan and metropolitan counties among primary care providers
using an electronic health record system – United States, 2014-2017.
Morbidity and Mortality Weekly Report 68(2), 25-30.

Centers for Disease Control and Prevention. (2019b). Preventing chronic diseases
and promoting health in rural communities. *National Center for Chronic
Disease Prevention and Health Promotion*. https://www.cdc.gov/
chronicdisease/resources/publications/factsheets/rural-health.htm

Collins, F. (2017). The Federal response to the opioid crisis. www.drugabuse.gov.
https://www.drugabuse.gov/about-nida/legislative-activities/testimony-to-
congress/2017/the-federal-response-to-the-opioid-crisis

Corroon, J., & Phillips, J. A. (2018). A cross-sectional study of cannabidiol users.
Cannabis and Cannabinoid Research 3(1), 152-160.

Elias, R., Raheb, M., Istasy, M., Mekhaiel, D., Sidhu, G., Warren, D., Cernovsky, Z., & Sadek, G. (2019). Knowledge of cannabinoids among patients, physicians, and pharmacists. *Archives of Psychiatry and Behavioral Sciences 2*(1), 25-28.

Hammell, D. C., Zhang, L. P., Ma, F., Abshire, S. M., McIlwrath, S. L., Stinchcomb, A. L., & Westlund, K. N. (2016). Transdermal cannabidiol reduces inflammation and pain-related behaviours in a rat model of arthritis. *The European Journal of Pain 20*(6), 936-948.

Hauser, W., Fitzcharles, M. A., Radbruch, L., & Petzke, F. (2017). Cannabinoids in pain management and palliative medication. *Deutsches Arzteblatt International 114*, 627-634.

Health Resources & Services Administration (2019). Rural health opioid program. https://www.hrsa.gov/ruralhealth/programopportunities/fundingopportunities/default.aspx?id=5b14a72b-a116-4041-bfa0-7d2e894e52d3

Masters, K. (2018). Models and theories focused on nursing goals and functions. In J. B. Butts & K. L. Rich (Eds.). *Philosophies and theories for advanced nursing practice* (3rded., pp. 446-451). Burlington, MA: Jones & Bartlett Learning.

Miller, B., Baptist, J., & Johannes, E. (2018). Health needs and challenges of rural adolescents. *Rural & Remote Health, 18*(3), 1-13.

O'Brien, M., & McDougall, J. J. (2018). Cannabis and joints: scientific evidence for the alleviation of osteoarthritis pain by cannabinoids. *Current Opinion in Pharmacology 40*, 104-109.

Petiprin, A. (2016a). Pender's health promotion model. *Nursing Theory*. http://nursing-theory.org/theories-and-models/pender-health-promotion-model.php

Petiprin, A. (2016b). Pender's health promotion model. *Nursing Theory*. http://nursing-theory.org/theories-and-models/pender-health-promotion-model.php

Philpott, H. T., O'Brien, M., & McDougall, J. J. (2017). Attenuation of early phase inflammation by cannabidiol prevents pain and nerve damage in rat osteoarthritis. *Pain 158*, 2442-2451.

Philpot, L. M., Ebbert, J. O., & Hurt, R. T. (2019). A survey of the attitudes, beliefs and knowledge about medical cannabis among primary care providers. *BMC Family Practice.*

Ratcliffe, M., Burd, C., Holder, K., & Fields, A. (2016). Defining rural at the U.S. Census Bureau. *American Community Survey and Geography Brief.* https://www.researchgate.net/profile/Michael_Ratcliffe2/publication/311533270_Defining_Rural_at_the_US_Census_Bureau/links/584aad3708aeb19dcb758910/Defining-Rural-at-the-US-Census-Bureau.pdf

Rigg, K. K., Monnat, S. M., & Chavez, M. N. (2018). Opioid-related mortality in rural America: Geographic heterogeneity and intervention strategies. *International Journal of Drug Policy, 57*, 119-129.

Rural Health Information Hub. (2019, Aug 24). *Substance abuse in rural areas*. *The Rural Monitor.* https://www.ruralhealthinfo.org/topics/substance-abuse

Salmond, S., & Allread, V. (2019). A population health approach to America's opioid epidemic. *Orthopedic Nursing 38*(2), 95-108.

Shipley, A. (2019). Opioid crises affects all Americans, rural and urban. *National Institute of Food and Agriculture*. https://www.usda.gov/media/ blog/2018/01/11/opioid-crisis-affects-all-americans-rural-and-urban

Szaflarski, M., McGoldrick, P., Currens, L., Blodgett, D., Land, H., Szaflarski, J. P., & Segal, E. (2016). Cannabinoid knowledge and attitudes among US Healthcare providers. The University of Alabama at Birmingham. https://www.cannabinoidclinical.com/sites/default/files/pdf/POSTER_Szaflar ski_M_et_al_combined.pdfhttps://www.cannabinoidclinical.com/sites/defaul t/files/pdf/POSTER_Szaflarski_M_et_al_combined.pdf

Tweed, V. (2019). Ease your aches with CBD. *Better Nutrition 81*(8), 20-21.

VanDolah, H. J., Bauer, B. A., Mauck, K. F. (2019). Clinicians' guide to cannabidiol and hemp oils. *Mayo Clinic Proceedings 94*(9), 1840-1851.

Upshur, C. C., Luckmann, R. S., Savageau, J. A. (2006). Primary care provider concerns about management of chronic pain in community clinic populations. *Journal of General Internal Medicine 21*(652).

U.S. Department of Health and Human Services. (2019*). What is the U.S. opioid epidemic?* https://www.hhs.gov/opioids/about-the-epidemic/index.html

APPENDICES

APPENDIX A: CONSENT TO PARTICIPATE

Consent to Participate in DNP Project Title
Cannabis for Chronic Pain: A Provider's Perspective

By signing this form, I agree to voluntarily participate in this research study.

I understand
the purpose of this project, and have been given the opportunity to ask any
questions regarding the project.
I understand
my data will be stored on a password-protected, personal laptop used solely by the
researcher.
I understand
my data will be saved for six months, after which it will be permanently deleted.
I understand
I can withdraw from the study at any time.
I understand
I can refuse to answer any questions at any time.
I understand
I can withdraw my responses up to one week after the interview, at which time
my responses will be permanently removed from the study, and all files deleted.
I understand
that my responses may be quoted in the final project, conferences, or published
articles.
I understand
that under the Freedom of Information Act, I am entitled to access the information
I have provided at any time while it is in storage as specified above.
I understand
that if I feel any participant is at risk for harm during this process that I am able to
contact relevant authorities.
I agree to
participating in semi-structured interview via Zoom.
I agree to
my interview being audio-recorded.

Feel free to contact us if you have any questions about the project or study results.
Contact Holly Maples at 707-227-2697 or via email at hollysita05@mail.fresnostate.edu

Signature of Participant _____Date _____
Signature of Researcher _____Date _____

APPENDIX B: INTRODUCTORY STATEMENT

Dear Colleagues:

We are conducting a study that will include a brief online survey and short video interview to follow. The study will evaluate the perspective of providers on the use of cannabidiol (CBD) for chronic pain in the rural health setting. Currently, gaps in the research regarding provider perspective on CBD include provider understanding of the components of CBD, effectiveness of CBD, and preparedness to answer patient questions regarding CBD.

Because of your experience and expertise in providing patient care to adults in the rural health setting, we are seeking your feedback on the use of CBD to manage chronic pain. The online survey will take approximately 2 minutes to complete. The semi-structured, virtual interview will take approximately 20 minutes to complete. Each participant will be assigned an identification number in order to ensure privacy and confidentiality. No name or address of the responder will be included. Your participation in this survey is completely voluntary. You may skip a question or exit the survey or interview at any time. No compensation will be provided to the participants.

Your participation in this study is very important to us. Your input is valuable in understanding more about the familiarity, knowledge, and comfort providers in rural areas have of CBD. Information generated from your participation in this survey will contribute to the literature on the perspective providers have on the use of CBD for chronic pain.

A survey link has been sent to your email via Survey Monkey. The first question requests your consent to participate in the survey, followed by five brief questions. Once consent has been confirmed, and the survey completed, we will arrange a time to perform the virtual interview.

Feel free to contact us if you have any questions regarding this project, and would like to be informed about the final findings of the study.

Thank you for your participation.

Very respectfully,

Heidi He, DNP, FNP-C

Graduate Program Director,

California State University,

Bakersfield

Primary Investigator

hhe@csub.edu

661-331-3610

Holly Maples, MSN, FNP-C

Doctoral Student,

California State University,

Fresno

Co-Investigator

hollysita05@mail.fresnostate.edu

707-227-2697

APPENDIX C: SURVEY SAMPLE

Provider Interview Pre-Questionnaire

1. By choosing "Approve" below, I agree to complete this survey and have my responses anonymously recorded for analysis.

   Approve

   Disapprove

2. What is your gender?

   Male

   Female

3. What is your ethnicity? (Please select all that apply)

   American Indian or Alaskan Native

   Asian or Pacific Islander

   Black or African American

   Hispanic or Latino

   White/Caucasian

   Prefer not to answer

   Other (Please specify)

4. What is your age?

   25 to 34

   35 to 44

   45 to 54

   55 to 64

   65 and older

5. What are your credentials?

       MD

       DO

       PA

       NP

6. How many years of experience do you have working as a provider?

       Less than 1 year

       1 to 5 years

       6 to 10 years

       11 to 15 years

       Greater than 16 years

Fresno State

<u>Non-exclusive Distribution License</u> (Keep for your records)
(to archive your thesis/dissertation electronically via the Fresno State Digital Repository)

By submitting this license, you (the author or copyright holder) grant to the Fresno State Digital Repository the non-exclusive right to reproduce, translate (as defined in the next paragraph), and/or distribute your submission (including the abstract) worldwide in print and electronic format and in any medium, including but not limited to audio or video.

You agree that Fresno State may, without changing the content, translate the submission to any medium or format for the purpose of preservation.

You also agree that the submission is your original work, and that you have the right to grant the rights contained in this license. You also represent that your submission does not, to the best of your knowledge, infringe upon anyone's copyright.

If the submission reproduces material for which you do not hold copyright and that would not be considered fair use outside the copyright law, you represent that you have obtained the unrestricted permission of the copyright owner to grant Fresno State the rights required by this license, and that such third-party material is clearly identified and acknowledged within the text or content of the submission.

If the submission is based upon work that has been sponsored or supported by an agency or organization other than Fresno State, you represent that you have fulfilled any right of review or other obligations required by such contract or agreement.

Fresno State will clearly identify your name as the author or owner of the submission and will not make any alteration, other than as allowed by this license, to your submission. **By typing your name and date in the fields below, you indicate your agreement to the terms of this use. Publish/embargo options (type X in one of the boxes).**

| X | **Make my thesis or dissertation available to the Fresno State Digital Repository immediately upon submission.** |

| | Embargo my thesis or dissertation for a period of 2 years from date of graduation. After 2 years, I understand that my work will automatically become part of the university's public institutional repository unless I choose to renew this embargo here: fsdr-discuss@csufresno.edu |

| | Embargo my thesis or dissertation for a period of 5 years from date of graduation. After 5 years, I understand that my work will automatically become part of the university's public institutional repository unless I choose to renew this embargo here: fsdr-discuss@csufresno.edu |

Holly Maples

Type full name as it appears on submission

May 26, 2021

Date