PHYSICAL THERAPIST VIEWS AND EXPERIENCES WITH PATIENT USE OF MARIJUANA

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A Thesis Presented to

The Faculty of Humboldt State University

In Partial Fulfillment of the Requirements for the Degree

Master of Science in Kinesiology

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December 2019

ABSTRACT

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Conditions seen within physical therapy settings overlap with reasons that patients seek marijuana. For this reason, information about these professionals' outlooks on patients' marijuana use in prime. **Purpose**: Gain current views and experiences of physical therapists (PTs)/physical therapist assistants (PTAs) on their patients' use of marijuana in the physical therapy field. **Methods**: PTs/PTAs were invited to complete an anonymous survey asking relative PT/PTA views, experiences, and understanding of patients' marijuana use. **Results**: PTs/PTAs who have had experience (did not have experience) with patients who use marijuana received information about marijuana from news media - 61% (60%), patients - 68% (15%), and friends & family - 47% (35%). 72.17 percent reported having experience working with patients who use marijuana. PTs/PTAs agreed that: marijuana has health benefits for people who suffer from chronic debilitating conditions, there needs to be more research on the role of marijuana in physical therapy, and training should be incorporated into PT curriculum. **Discussion:** PTs/PTAs were likely to receive information about marijuana through news and their patients; not peer-reviewed publications. PTs/PTAs who had experiences working with patients who use marijuana could benefit from more in-depth conversations with patients

about their marijuana usage. PTs/PTAs are aware of patients' marijuana usage and support acquiring more knowledge of marijuana through further research, education, and conversations. **Conclusion**: Because PTs/PTAs have already begun working with patients who use marijuana, it is vital that more research into the effects of marijuana is conducted and peer-reviewed information be made available for practicing PTs/PTAs and students.

ACKNOWLEDGEMENTS

A big thank you goes to Dr. Whitney Ogle for taking me on as her first graduate student at Humboldt State University; a positive influencer, a generous role model, and a great friend. I also want to say thank you to my parents Monica De La O and Arthur Basurto for all of their support throughout my entire life, I would not be here if I did not have them. I am grateful for: Dr. Gregg Gold, Dr. Ara Pachmayer, Dr. Rock Braithwaite and Dr. Jill Pawlowski; professors of Humboldt State University whom have helped shape my Master's thesis with their incredible and informative feedback. I will forever remember my greatest losses, but I shall continue to cherish the times of my wins.

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INTRODUCTION

Many symptoms and conditions seen within the physical therapy community tend to overlap with the reasons that patients seek the treatment pathway of marijuana (Ciccone, 2016). Many patients of physical therapy experience spasticity, inflammation and pain; important factors to keep to a minimum when treating patients in a physical rehabilitation setting (Ciccone, 2016; Walsh et al., 2013). Previous research has found that some patients who seek physical therapy also seek the use of marijuana for its uses of pain management and muscle spasticity in addition to their rehabilitation regimen (Reinarman, Nunberg, Lanthier, & Heddleston, 2011). With the mirroring of these conditions within physical therapy clinics, it is logical to give attention to physical therapists and physical therapist assistants for their opinions and experiences involving marijuana use amongst their patients and work settings (Ciccone, 2016). Physical therapists not only serve as the front line to a patient's rehabilitation, but also a powerful database for alternative treatments and medicinal recommendations (Ciccone, 2016; Doblin & Kleiman, 1991).

The United States has become enveloped in the legalization of marijuana with its initial state of California being the first for medicinal purposes (Palamar, Ompad, & Petkova, 2014). However, the government still holds the illicit drug accountable on the schedule 1 drug list; blurring lines for the criminalization on utilizing it within recreational and medical research (Bostwick, 2012). These blurred lines may also cause gap for the proper conversations and discussions of healthcare practitioners and their

patients. In-depth communication of whether a patient may use a marijuana-based alternative medically or recreationally in conjunction with their therapy has a level that remains shallow, for the fear of professionals or patients self-incriminating themselves or risk breaking other legal terms (Voth, 2001).

The way physicians and physical therapists communicate these alternatives to their patients play an important role in their treatment process. Exceptional training and education for these therapists may give them the profundity in which allows them to feel comfortable diving deeper into the conversations they have assessing their patients' methods of marijuana usage (Chan, Knoepke, Cole, Mckinnon, & Matlock, 2017). Moving forward, marijuana implementation within the physical therapy field requires acknowledging the opinions and experiences of both the physical therapists and physical therapist assistants who may have come into contact with patients who use marijuana in conjunction with their process of physical therapy. These acknowledgements are essential to commence progress for both parties in the proper education and understanding of marijuana in the physical therapy field.

Thesis Statement

The purpose of this study is to understand how physical therapists and physical therapy assistants view marijuana use in the physical therapy field and their patients' use of marijuana in conjunction with physical therapy. Understanding general perspectives and viewpoints are important for physical therapists to ensure safety and enhance patient education in the context of physical therapy intervention. In order to gain a more

complete picture of the intersection between physical therapy and marijuana, we surveyed current physical therapists and physical therapy assistants who may or may not have come into contact with patients who use marijuana.

Endocannabinoid System: Brief Review

Marijuana contains approximately 100 cannabinoids, however there are two substrates that are mainly focused on within the health community: THC and CBD. The tetrahydrocannabinol (THC) cannabinoid tends to be responsible for the psychodynamic effects when absorbing marijuana, while cannabidiol (CBD) has been promoted for its therapeutic capabilities and health promotions (Ciccone, 2017). The cannabinoid system has evolved with our species in ways that it plays a role in the regulation of pain, memory, hunger, movement, immunity and inflammation (Aggarwal, Kyashna-Tocha, & Carter, 2007). The human body contains two types of cannabinoid (CB) receptors: CB1 and CB2 that, when inhibited by respective endocannabinoids, cause analgesic effects. Densely packed mainly in the central nervous system, in areas that are highly involved with modulation of pain, lie the CB1 receptors. CB2 receptors are located outside of the central nervous system, within lateral tissues that have immunity functions such as the spleen (Ulugol, 2014). Synthetic Cannabinoids are developed in the medical field for their potential abilities to replicate the functional benefits of marijuana without all the psychodynamic effects such as: immobilization, euphoria, hypothermia, short-term memory loss and decreased immunity responses (Chiou, Hu, & Ho, 2013). Suggestions by Chiou et al. (2013) say that the administration of monoacylglycerol lipase (MAGL)

inhibitors have an analgesic effect on neuropathic pain, as well as fatty acid amide hydrolase (FAAH) having a significant part in regulating nociceptive pain when inhibited by its induced CB1 receptor, which also showed a decrease in pain sensitivity (Chiou et al., 2013). These cannabinoid receptors process agonist molecules called "endocannabinoids," which are then synthesized, released, transported and metabolized throughout the system. As the endocannabinoids manipulate the receptors, levels of: appetite, immunity, sleep, memory, stress, thermoregulation, addiction and analgesia have been reported to be more desirable for patients. (Ware et al., 2010).

Methods of Consumption

There are multiple ways to consume marijuana; however, the most common cannabinoids consumed are THC, nabilone, dronabinol and cannabidiol. Dronabinol is a form of synthetic THC, used for suppressing the side effects of chemotherapy and anorexia-cachexia syndrome which include nausea and vomiting. Nabilone is also a synthetic form of THC that has been shown to aid in the management of pain in advanced cancer patients (Pascual, Sánchez-Robles, García, & Goicoechea, 2018). Reported by Ste-Marie, Fitzcharles, Gamsa, Ware, and Shir (2012), the most common method of delivery for their studied population is smoked marijuana, holding 10% of a 457 population from a clinic that specializes in treating fibromyalgia. It has also been approved to treat cancer pain by acting as an "adjuvant analgesic in malignant diseases." Cannabinoids may also be made into oils to be used in butters for edible products such as candies, lozenges, cookies, pastries, drinks, and other edible products (Ciccone, 2016).

Some marijuana products take the form of a creme (or cream) like substance and rubbed onto the skin to be absorbed; however, it has been said to not be the most effective form of application according to Aggarwal, Kyashna-Tocha, & Carter (2007).

When ingested, these substances enter systemic circulation and eventually effect the central nervous system various ways. Because of the forward progression of medical cannabis and all other alternatives alike, the FDA and the DEA have agreed to reclassify the scheduled status of the cannabinoid: Dronabinol, to a schedule 3 from a schedule 2 for its satisfactory safety profile (Aggarwal, Kyashna-Tocha, & Carter, 2007).

Patients' Experiences and Use of Marijuana

There are multiple reasons people utilize marijuana, otherwise known as "cannabis" or "weed," in combination with other treatments to manage certain symptoms. Some users truly seek marijuana as recreational, however they use their illness as a justification according to researchers (Ste-Marie et al., 2012). Bostwick (2012) suggests that there is a hazy boundary between users of medical and recreational marijuana; stating that while one seeks it for medicinal properties, the other seeks it for intoxication. Former recreational users who have familiarized themselves with its psycho dynamic effects are more likely to favor the therapeutic properties and continue the treatment (Bostwick, 2012). According to Walsh et al. (2013), online surveys of self-selected participants who use marijuana for medical purposes reported that they use marijuana to treat multiple symptoms including insomnia, nausea, anxiety, arthritis and chronic spinal and non-spinal spasms. Other direct symptoms of the condition including: inflammation,

anxiety, ocular pressure and negative mood, have also been suggested reasons for the use of marijuana. Marijuana is said to aid the side effects of multiple-sclerosis (MS); helping to also regulate blood sugar, tics, seizures, impotence and high blood pressure (Walsh et al., 2013).

Multiple sclerosis, fibromyalgia, distal pain, inflammation and many other conditions are seen within the physical therapy clinics that are also associated with patients who use marijuana. Marijuana has analgesic qualities for it attempts to relieve pain with its side effects. For example, Abrams et al. (2007), studied the effects of smoking marijuana cigarettes three times a day on individuals with HIV derived sensory neuropathy; finding that marijuana use was associated with analgesic (acting to relieve pain) effects as it progressed to relieve 34% more pain compared to a control group. Though side effects such as: anxiety, sedation, confusion, disorientation and dizziness were low in both populations, they were more prominent in the marijuana group (Abrams et al., 2007).

To improve positive results of patients' recovery, research has also suggested that patients who are participating in a pain rehabilitation program have statistically improved their pain status when using marijuana along with their regimen (Shah, Craner & Cunningham, 2017). Within the Ware et al. (2010) study, participants with refractory pain who were involved with conventional therapies that had failed, were administered single doses of marijuana through a titanium pipe for 14 days. Results showed that these participants were able to achieve sleep faster, fall asleep more easily and woke less throughout the night. Additionally, participants who had chronic post-surgical or post-

traumatic neuropathic pain reported reduced pain intensity with marijuana use. Researchers concluded their interpretation of the results as smoked marijuana being a positive aid towards pain reduction, improved mood and sleep assistance (Ware et al., 2010). Additionally, individuals with fibromyalgia (FM) have reported decreases in stress, sleeplessness and pain as a result of self-medication of cannabinoids (Ste-Marie et al., 2012).

Health Care Practitioners Experience and Opinions on Patients' Use of Marijuana

Physicians today are caught in limbo with educating and prescribing marijuana to their patients without incriminating themselves into civil litigations for malpractice due to laws and outsider points of view (Voth, 2001). For example, though the state of Washington passed the medical marijuana initiative law, I-692, there was still no protection for marijuana users against federal law (Aggarwal, Kyashna-Tocha, & Carter, 2007). Washington is estimated to have 1000-2000 licensed physicians prescribing marijuana to medical patients for all types of their conditions; this magnitude is also reflected in the state of Oregon (Aggarwal, Kyashna-Tocha, & Carter, 2007).

Doblin and Kleiman (1991) conducted a survey of 11700 oncologists in the U.S. from backgrounds in clinical, academic and research. The results showed that a vast majority of oncologists had patients that already use marijuana in their treatment and have openly conversed about the risks and benefits. A majority of respondents also said that marijuana was an effective treatment of emesis (vomiting) within their patients, however the more inexperienced a patient was with marijuana use, the more side effects

they would experience (Doblin & Kleiman, 1991). With many physicians' advising their patients to attempt a treatment that is illegal by law, outlines of how uneven general acceptance with "clinical and regulatory opinions" are becoming more prominent (Doblin & Kleiman, 1991).

Bega, Simuni, Okun, Chen, and Schmidt (2016) conducted a survey of physicians treating individuals with Parkinson's disease (PD). The results showed that a vast majority of clinicians had patients who were prescribed and using marijuana; yet less than a quarter of the physicians had any sort of proper education on the drug itself (Bega et al., 2016). Furthermore, 93% of the physicians surveyed agreed that the education of marijuana should have more focus within the medical school curriculum (Bega et al., 2016). Authors conclude the findings in this article as a representation of the issues in translation from the scientific evidence to clinical settings and the information that is passed along (Bega et al., 2016). These types of issues are extremely significant and should be taken into consideration when informing and prescribing patients (Bega et al., 2016).

Similarly, the results of a survey distributed by Kondrad and Reid (2013) looked at the physicians of Colorado's attitude toward the state's general view and practice of marijuana. Results found that there is a dissatisfaction amongst these views of physicians for the reason that marijuana specific training within the Colorado system has not been a greater focus (Kondrad & Reid, 2013). This plays an important role when it comes to prescribing marijuana and explaining its significant health effects (Kondrad & Reid, 2013). Considerations given within this study that could benefit the marijuana community

as a whole are: strict guidelines in determining who qualifies for marijuana, requirements of physicians to receive proper education and training before recommending marijuana (Kondrad & Reid, 2013).

Carlini, Garrett, and Carter (2017) conducted a survey of health care professionals in Washington State to examine their clinical practices in prescribing medicinal marijuana (MM). Results show that the majority of responders were uncomfortable with recommending MM to their patients, despite perceptions that marijuana could be to their benefit (Carlini et al., 2017). When questioned what could be implemented to better their comfortability they gave the responses: education programs for health care providers, more clinical data, more research proving effectiveness, algorithms for recommending MM, endorsed clinical guidelines, and change in marijuana federal legal status (Carlini et al., 2017). In comparison with other surveys' results, this article ties them together with how therapists are limited to information given to their patients due to the lack of education and other federal forces preventing marijuana acceptance within clinical situations (Carlini et al., 2017).

Maccallum and Russo (2018) reassures the issue that a better understanding of dosing and pharmacology for the physicians and other clinical administrators will further the benefits and expectations of patients who use marijuana. Furthermore, negative and positive effects of these remedies could then be communicated in terms which patients understand; leaving little room for ignorance on this specific medicinal pathway (Ciccone, 2016).

Students' Opinions on Marijuana

Student perceptions in the educational routes towards medical wellness help shape the future of today's human survival through the teachings of new medicines and protocol pathways. Moeller and Woods (2015) conducted a study that looked at the knowledge and attitudes towards marijuana via a Likert-scale survey of 311 pharmacy students from The University of Kansas (Moeller & Woods, 2015). Results show that students who have had previous experience with marijuana are more likely to report that it should be legalized recreationally (54% of population) as well as medically (78% of population) (Moeller & Woods, 2015). Students who previously had experience with marijuana also had better scores of identifying probable uses for the treatment such as glaucoma, schizophrenia, PD, HIV and others; showing that it is more likely for those who have used marijuana before have more knowledge on the subject (Moeller & Woods, 2015). Reportedly, student comfortability with discussion of the marijuana with patients were low (average: 2.1, 2.2 and 2.3); however, 90% of the students indicated that more instruction of marijuana should be included within the curriculum (Moeller & Woods, 2015). Similarly, Chan, Knoepke, Cole, Mckinnon and Matlock (2017), conducted a survey of students from the University of Colorado on their perceptions of using marijuana in a healthcare setting. Results illustrated the perceived positive effects that marijuana has on patients who suffer from cancer, cachexia, HIV/AIDS, pain, nausea, glaucoma, seizures and persistent muscle spasms (Chan et al., 2017). Students believed that with further research and reduction in regulations, marijuana may prove to be more

beneficial than harmful; thus, leading to a decrease in disciplinary action against medical professionals who prescribe marijuana (Chan et al., 2017).

Sources of Information

The source of an information may just be as important as the information itself, given the reliability and general agreement on what the information explains. Looking at the Carlini et al. (2017) study, participants who authorized MM to their patients had received a majority of their information about MM from news media (54.7%), patients (70.7%), other providers (76%), and medical journals (67.1%). Similarly, those health care providers who have not authorized MM to their patients received a majority of their information about MM from news media (53.2%), patients (56.7%), other providers (53.7%), and medical journals (49.5%). In contrast, Bega et al. (2016) found that the physicians that responded to their study, formulated their opinions based off of the information they received from mostly from medical journals; they also reported their own personal experience, the media, and other physicians helped shape their opinions about marijuana. These results show that there are mixed information resources that health care providers are utilizing to form their opinions and beliefs on the use of marijuana in the medical field; resources that are peer-reviewed and resources that are media-based. How will the resources that physical therapists and physical therapists choose to utilize, factor into their opinions and experiences?

Looking Into Physical Therapy

To our knowledge, there is no current research on examining the experiences and opinions of medical marijuana as it pertains directly in their patients' physical therapy regimens. Knowledge of how marijuana can assist patients as a medical pathway needs to be communicated and learned throughout the entire health system because natural remedies are once again becoming a greater tool the more they are understood scientifically. Synthetic medicine may be a powerful solution, however after analyzing these articles, the progression of science and research in the field of marijuana may well be as a close second. For that reason, physical therapists play key roles in the rehabilitation of their patients and should be a strong medium for medical communication of all sorts. Not just for the sake of instilling an additional learning system within the physical therapy curriculum, but for the proper education of those who have yet experienced the medical side of marijuana; not just the hallucinogenic side of that coin (Ciccone, 2016).

METHODS

Survey Design

The survey consisted of 37 questions within 5 sections: (1) Consent to Act as a Research Participant, (2) Experience with Marijuana, (3) Working with Patients who Use Marijuana, (4) Views on Marijuana Policies and (5) Demographics. Questions of these sections are variabilities of: multiple choice, Likert-type scale and free response (fill in the blank). They cover most situations within the physical therapy clinic that pertains to reasons for patients' use and therapists' perspectives and experience on that use. Questions asked were taken from other healthcare personnel perception studies and adapted to be specific to physical therapy practice (Calini et al., 2017; Chan et al., 2017; Konrad et al., 2013). Questions regarding demographics were taken from the APTA website. The survey was accessed via a website link and took an average of 6 minutes to complete. Questions included were able to be skipped at any time without penalty, resulting in staggered participant responses per question.

Participants

135 total participants were recruited for the survey; two of the participants' answers were discarded for not agreeing to the consent form. 113 indicated their profession: physical therapists (108) and physical therapist assistants (5). Participants comp1eted a survey that requested their opinions and experiences with marijuana, or lack thereof, in the physical therapy field. Individuals were licensed Physical Therapist (PT)

or Physical Therapist Assistant (PTA) who had access to a computer or other internet streaming device and are able to read and write in the English language. PTs and PTAs gave their experience with, perceptions of, and knowledge of marijuana; first-hand experience is preferred but not needed. Participants were recruited for the study through distributed flyers, word-of-mouth and emails. IRB approval was obtained prior to the beginning of the study and all participants provided informed consent before survey commencement.

Recruitment

After acquiring the IRB approval (#17-095), participant recruited then commenced. Fliers, emails and messages were sent through various social media platforms, local physical therapy clinics, the PT notes through the California Physical Therapy Association and word of mouth throughout the physical therapy community. Demographics and practice settings reflected a heavy participation from PTs and PTAs in California and/or outpatient facilities. Demographics and practice settings reported by participants (n = 116) resulted in a majority practicing in California (68.97%) with the next highest group being from Texas (4.31%) displayed in Table 1. Practice settings of participants (n = 116) reported majorities being outpatient facilities (45.69%), hospital-based outpatient facilities (15.52%) and home health care organizations (11.21%) indicated in Table 2.

Table 1 Self-Reported State of Practice from PT and PTA Respondents*

State	% of Respondents (n = 116)
California	68.97% (n = 80)
Texas	4.31% (n = 5)
Arizona	3.45% (n = 4)
Pennsylvania	3.45% (n = 4)
Illinois	2.59% (n = 3)
Other	2.59% (n = 3)
Washington	1.72% (n = 2)
Oregon	1.72% (n = 2)
Other**	<0.87% (n = 1)

*Values are presented as a percentage of the population studied
**CO, MA, MO, IN, GA, ME, IA, KS, RI, FL, MN, MI, VA

Table 2 Self-Reported Practice Setting of PT and PTA Respondents

Setting	% of Responded Settings (n =116)
Outpatient facility	45.69% (n = 56)
Hospital based outpatient	15.52% (n = 18)
Home health	11.21% (n =13)
Acute care hospital	8.62% (n = 10)
Academic institution	7.76% (n = 9)
Other (please specify)**	6.03% (n = 7)
Health & Wellness facility	1.72% (n = 2)
Skilled nursing facility	0.86% (n = 1)
School system	0.86% (n = 1)

*Values are presented as a percentage of the population studied
**More than one setting, doctor's office, traveler, private practice, own business of one practitioner - visit in client's home, both urban in orthopedics and rural in geriatrics, and outpatient HMO

The average age was 43.62 ± 14.46 with 61 female, 53 male and 1 non-binary participants (PT = 108, PTA = 5) indicated in Table 3.

Table 3 Self-Reported Demographics of PT and PTA Respondents

Category	% of Responded Choices (n = selections)
Female	53.04% (n = 61)
Male	46.08% (n = 53)
Non-binary	0.87% (n = 1)
Physical Therapist (PT)	95.57% (n = 108)
Physical Therapist Assistant (PTA)	4.43% (n = 5)

Data collection

The surveys were conducted online and were anonymous from 2/22/2018 through 10/22/2019. Access to the surveys were through the survey generator website: Survey Monkey. If they received the flyer, the participant went to the website indicated on it; if they did not receive the flyer they would have been directed to the website through another source. After informed consent was given, the participants answered as many questions truthfully as they could until all of the questions have been passed through. General question description has been stated above. Patients may have withdrawn from the survey if they desired without penalties. Ideally, there would have been one answered survey per participant.

Analysis

Descriptive statistics were used to summarize respondents' total selection values of each question. The surveys reported counts and percentages representing the population of a general region and served as a sample for the population as a whole. Answers from Survey Monkey were extracted to a Microsoft Excel spreadsheet and IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY:

IBM Corp for analysis. After general demographics were tallied, data was separated into PTs and PTAs who have had experience versus those who have not and further analyzed. We compared the mean, standard deviations, percentage of, and total responses to identical surveys of those who have had experience with marijuana against those who have not. To simplify and create numerical value in the Likert-Scale type questions, selection choices were given values as: 5-strongly agree, 4-agree, 3 neutral, 2-disagree, and 1 strongly disagree. Current descriptive analyses were performed as exploratory research and was without a prior hypothesis.

RESULTS

When asked the sources for receiving their information 135 PTs/PTAs responded. Participants who had prior experience with patients who use marijuana (n = 115) indicated their primary sources of information on marijuana as news media (61%), patients (68%), personal opinions (52%) and friends or family (47%). Those who have not had experience with patients that use marijuana (n = 20) indicated their primary source of information as news media (60%), Family/friends (35%), continuing education (30%), personal experience and peer-reviewed articles (25% each). Results are presented in Table 4.

Table 4 Self-Reported Sources of Knowledge about Marijuana from PTs and PTAs Who May Have Had Prior Experience with Marijuana*

Information Source	Not Experienced (n = 20)	Experienced (n =115)
News media	60%	61%
Patients	15%	68%
Other providers	15%	19%
Peer-reviewed journal articles	25%	25%
Lectures	10%	23%
Friends/family	35%	47%
Dispensary owners/staff	20%	19%
Continuing Education	30%	21%
Personal experience (Med. or Rec.)	25%	40%
Personal opinion	10%	52%
I know very little about medical marijuana	20%	20%
Unsure	0%	1%
Other	15%	3%

*Values are presented as a percentage of the population studied
Abbreviations: PT, physical therapists; PTA, physical therapist assistants; Med., medical; Rec., recreational

Data was extracted and segregated to look only at responses that indicated that they had prior experience with marijuana (n= 115). Within this group, PTs and PTAs reported that they have had experience working with patients who use marijuana both medicinally and recreationally (72.07%); others reported just recreationally (2.94%), or just medicinally only (25%). When asked what type of products patients were known to use, 36.36% of participants reported that their patients use non-psychoactive (CBD) products, while 29.55% of the participants are completely unsure of what product their patients use. Other marijuana products participants selected were: Hybrid (Sativa-Indica) (11.36%), Sativa-dominant (10.23%), Indica-dominant (8.52%), and "other" (3.96%). The majority of the reported ingestion methods of marijuana that patients were said to be using were topical (24.75%), and edible methods (18.64%). Less frequently reported were liquid tinctures (16.61%), smoking leaves (13.9%), vaporized concentrates (8.14%), vaporized leaves (7.46%), and smoke concentrates (5.42%). Residual respondents were unsure (4.75%) of their patient's consuming methods or chose "other" (0.34%). Participants were asked to report their most common physical therapy and medical treatment diagnoses and responded with fill in the blank. According to the results shown in Table 5, PTs and PTAs reported that general pain (47.87%), as well as chronic pain stemming from various causes, was the common physical therapy and medical diagnosis for patients who use marijuana.

Table 5 PTs and PTAs Report of Most Common Physical Therapy and Medical Treatment Diagnosis for Patients They Work with Who Use Marijuana

Diagnosis	% of Reported Sample (n = 189)
Pain/Chronic Pain	36.51% (n = 69)
(Lower) Back Pain	23.81% (n = 45)
Unsure/Unobserved	9.52% (n = 18)
Arthritis	7.94% (n = 15)
Trauma induced pain	4.23% (n = 8)
Spasticity	3.70% (n = 7)
Other (exercise, mobility, seizures, epilepsy etc.)	2.65% (n = 5)
Post-Operative	2.12% (n = 4)
Multiple Sclerosis	2.12% (n = 4)
Musculoskeletal (not specified)	2.12% (n = 4)
Cancer	1.59% (n = 3)
Neuropathy	1.59% (n = 3)
Fibromyalgia	1.06% (n = 2)
Cerebral Palsy	1.06% (n = 2)

Abbreviations: PT, physical therapist; PTA, physical therapy assistants

When asked to describe the timing of marijuana use in their patients relative to therapy, participants were allowed to choose multiple options. Of the total choices collected (n = 183) the majority responded that they were unsure (23.5%) of when their patients were using marijuana in conjunction with their therapy. Other choices of when patients used marijuana included: hours before appointments (14.21%), shortly before appointments (10.93%), during appointments (with CBD topical applicants) (6.5%), after appointments (6.65%), longer after appointments to assist with sleep (15.30%), days when not attending therapy (12.57%) and other (6.01%) various times such as “times during the day independent of therapy schedule,” “at times of pain dependency,” “before and after sessions simultaneously,” or “not having a specific pattern of timing.”

Respondents stated that if a patient obviously used marijuana prior to physical therapy, changes to their treatment plan would reflect: no change (31.25%), more manual therapy (4.69%), more therapeutic exercise (5.47%), more modalities (0.78%), more neuromotor re-education (3.91%), or patient education about the risks of marijuana use (3.13%). However, 34.38% of respondents said it would depend on the patient if there was a change in the treatment plan, while 16.41% responded other situational choices such as: “depending on method of ingestion used,” “shortening refraining on treatment time all together,” “level of intoxication,” and “therapy setting type.” When asked to describe the effects of marijuana on their patients’ participation, 40.82% of respondents stated that participation was patient-dependent, though 28.57% reported that there are no obvious changes in the patients' participation. Other answers given were that marijuana significantly improves (5.1%), moderately improves (6.12%), moderately declines (9.18%), and significantly declines (2.04%) patient participation in physical therapy. Participants also gave other (8.16%) answers such as: “unsure,” “observed pain reduction without affecting participation,” and “not having a true baseline as the patient has consistently used marijuana prior.”

When asked their opinions about marijuana as it pertains to physical therapy respondents who had prior experience with patients who use marijuana indicated that training should be incorporated into PT/PTA school curricula, made available/specific for PTs/PTAs, and that they would attend continuing education courses regarding marijuana shown in Table 6 (m = 4.17, 4.27, 4.13, respectively). Similarly, those who have not had experience with patients that use marijuana indicated that training should be made

available/specific for PTs/PTAs and that they would attend continuing education courses regarding marijuana (m = 4.32, 4.37). Both groups that have and have not had experience with patients who use marijuana agree that there should be more research looking at the role of marijuana on physical therapy patient populations (m = 4.58, 4.43).

Table 6 Self-Reported Likert-Scale Average Opinions about Marijuana from PTs and PTAs Who May Have Had Prior Experience with Marijuana (mean ± SD)*

Topic	Not Experienced (n = 20)	Experienced (n = 115)
I am comfortable discussing marijuana with patients.	3.79 ± 1.03	3.7 ± 1.03
Physical therapists and Physical therapist assistants should play a role in patient education regarding the risks and benefits of marijuana.	3.89 ± 0.99	3.82 ± 0.93
Training about marijuana should be incorporated into PT and PTA school curricula.	4 ± 1.05	4.17 ± 0.8
Training (CME) about medical marijuana should be available and specific for PT's and PTA's.	4.32 ± 0.82	4.27 ± 0.72
I would attend a continuing education course regarding marijuana.	4.37 ± 0.68	4.13 ± 0.90
There is not enough scientific evidence regarding med. marijuana to make any professional claims about its use.	2.79 ± 0.92	3.12 ± 1.03
There should be more research looking at the role of marijuana on physical therapy patient populations.	4.58 ± 0.51	4.43 ± 0.69
I am comfortable with my understanding of the endocannabinoid system.	3 ± 1.05	2.71 ± 1.02
I am comfortable with my understanding of non-psychoactive cannabidiol (CBD).	3.11 ± 1.05	3 ± 1.12
I am comfortable with my understanding of the use of medical marijuana.	3.44 ± 1.2	3.16 ± 1.04

Abbreviations: PT, physical therapists; PTA, physical therapist assistants; Med., medical; CBD, cannabidiol

*Likert-Scale values: 5-strongly agree, 4-agree, 3-neutral, 2-disagree, 1-strongly disagree

DISCUSSION

The purpose of this study is to understand how physical therapists and physical therapy assistants have experienced patients' use of marijuana in conjunction with their therapy regimen. We also looked at the opinions of physical therapists and physical therapy assistants about marijuana as it pertains to the physical therapy medical field. Participants of the study were assumed to give their honest opinions and experiences with marijuana and the physical therapy field.

Sources of Information

PTs and PTAs who have had experience with marijuana reported that the majority of their information stemmed from the news media, their patients, and their own personal opinion; those who did not have experience with marijuana had the majority of their sources of information being news media and friends/family. These results show that whether there was previous experience with marijuana or not, the majority of the information that PTs and PTAs are receiving comes from non-peer reviewed scientific sources. These are similar to the previous findings of surveys given to other health clinicians (Carlini et al., 2017). Our results reveal a similar trend with other studies looking at marijuana in the medical field; that patients are more knowledgeable than health care providers as they have been shown to be a primary resource of information about this drug. Reasons for this may be in part of the government restrictions hindering

significant amounts of research as marijuana is still classified as a schedule one drug; preventing ethical testing amongst researchers in the United States (Piomelli et al., 2019).

PTs' and PTAs' Experiences with Patients Using Marijuana

Ciccone (2016) goes into detail about how physical therapist are a useful pipeline for marijuana in the physical therapy field; with the goals being to reduce pain, spasticity and inflammation, they can also serve as primary educators and reference to their patients and physicians. Making marijuana a topic that can be utilized and learned allows physical therapists and other professionals the medical headroom for investigation on old and new products and administrations (Ciccone, 2016). PTs and PTAs in this study who reported having experience with marijuana responded in majority of knowing that their patients use marijuana for both medical and recreational purposes, however a third indicated that their patients use CBD products, while a third also indicated that they are completely unsure of what products their patients are using. These results indicate that these professionals are aware of what their patients are using marijuana for, but are not sure exactly the type of marijuana being used. As for the method of consumption by patients, respondents indicated that their patients are mainly using topical and edible methods instead of smoking and vaporizing products. Findings reveal that therapists have more experience with their patients not using inhalation for ingestion, but eating, drinking, and applications to the skin to take on the effects of marijuana. Because of this, participant may be limiting their chances for any lung or breathing difficulties that may be cause by inhalation of smoke or vapor, preventing further complications.

Now that the types and methods of how patients use marijuana as viewed by their therapists has been exposed, why do they use it? Therapists and assistants have reported that the main reasons for patients' use of marijuana that can be diagnosed with medical and physical therapy treatments are general (chronic) pain and more specifically (lower) back pain. These are similar to the responses that Reinarman et al. (2011) received from physicians when questioned they approve medical marijuana patient identification cards. These results also reflect the same findings from the Ware et al. (2010) and Abrams et al. (2007) studies where researchers concluded that the use of marijuana within their participants was a positive aspect in pain reduction. Respondents may have been told that their patients are using marijuana to offset or ease the pain that comes hand in hand with their conditions. Regardless of the patients' condition, on multiple occasions pain has made itself the top contender for marijuana use.

So how does timing of marijuana use factor into the equation? The majority PTs and PTAs reported that they were unsure of when their patients used marijuana in regards to their physical therapy appointment. This may be a result of PTs and PTAs lacking depth in the conversations they have with patients about their marijuana use. Other top reported timings of marijuana usage were hours before their therapy sessions or long after appointments to assist them with their sleeping patterns. These findings indicate that if patients are using marijuana in conjunction with their physical therapy sessions, they are either using hours ahead of time or waiting hours after their session. In this case, the immediate effects of their marijuana consumption are not factored in during the time spent with therapists and assistants.

Shifting towards the effects of marijuana on their physical therapy experience, we asked participants about their interactions with patients in the field while marijuana is involved. PTs and PTAs responded that if a patient would attend physical therapy after obviously using marijuana that changes within treatment plans would be specifically patient dependent. However, secondary results indicate that there would be no changes in the treatment plans at all, meaning that regardless of marijuana use, PTs and PTAs adhered to their planned protocols. During therapy, participants who had experience with marijuana reported effectiveness to their patients' participation in therapy as either predominantly patient dependent or not being affected at all. According to the results, marijuana in the physical therapy clinic has situational to no effect on protocol change and patient participation.

Views on Marijuana Use

Finally, when looking at the responses from the participants on their opinions about the subject of marijuana in the physical therapy setting, those who have had experience with marijuana and those who have not, both agree on many of the proposed situational statements. The respondents believe that marijuana education should be made that specifically available to meet the needs of PTs and PTAs. This is in line with the other previously explain studies as physicians and students' attitudes yearn for more specific guidelines within their certain medical field (Bega, et al., 2016; Moeller & Woods, 2015; Carlini et al., 2017). This shows that medical practitioners are aware that there is limited training in this subject of their medical field and also agree that in order to

progress in their field, proper exploration and protocol needs to be demonstrated in order to responsibly relay information towards patients. Participants of this study also agree that there should be more research looking at the role of marijuana on physical therapy and that they would attend continuing education on the subject. These views are also seen in the results of the Carlini et al. (2017) study where health care professionals felt that clinical guidelines and educational programs for health care providers should be implemented. Results from the current study contains participants that are willing to obtain new information about marijuana as they surface through medically accepted sources through continuing educational courses. PTs and PTAs are clearly aware that there is a lack of education, they feel that there needs to be more research, and they are motivated enough to attend further teachings about marijuana.

Interestingly enough, the experienced group felt less comfortable with their understanding of the endocannabinoid system than the non-experienced group. These are similar results to the pharmacy students who reported that they were uncomfortable with their understanding of the endocannabinoid system and not comfortable with having conversations about marijuana with their patients (Moeller & Woods, 2015). This is important when considering the conversations that significant to have when treating a patient, such as the understanding of a medical pathway and how it may impact a change in recovery or experience.

Limitations

With the Farm Bill Act of 2018, the regulation of hemp has been implemented and removed from the definition of marijuana, progressing the research of CBD and other derivatives (Abernethy, 2019). This event was enacted during the heart of data recruitment and may have allowed more participants to feel comfortable when taking our survey. Limitations of this study may have been the awareness of the survey, responses may have been limited due to the distribution of the surveys and how far the word of mouth aspect of data recruitment travelled from the Humboldt State University Kinesiology and Recreational Administration Department. As shown above, many of the participants were a representative of the state of California, a state where marijuana is legal both recreationally and medically. Also, flyers were more heavily posted in physical therapy clinics than other settings mentioned in the survey during recruitment, this may be the reason for the other physical therapy setting being incredibly under represented, if at all. Other limitations may be the honesty and truthfulness of the participants as they were assumed to give their honest opinions and experiences with marijuana and the physical therapy field while only completing one survey and not reentering multiple. Skipping of questions was also allowed and responsible for not having consistent participants in the results. A final limitation is that regulations limit the amount of in depth experience we can acquire, in this case we are only legally allowed to conduct survey participants rather than test subjects for higher quality research.

Future Directions

Further research needs to examine the patient's point of view and opinions of marijuana use in conjunction with their physical therapy regimen. Also, with the progressing legalization of marijuana, future research may be guided in the direction of examining the effects of marijuana as it relates to recovery in patients who seek physical therapy. Bostwick (2012), stated that marijuana shows promise in the treatment of diverse medical situations and illnesses. Maccallum and Russo (2018) concur in that marijuana will likely progress within medical fields if there is proper education and application as there is for other remedies.

CONCLUSIONS

The significance of this study is that physical therapists and physical therapy assistants are generally aware that marijuana use takes place in the physical therapy field. The responses received may have been based off of assumptions or conversations between provider and patient, however, most professionals still seem to be left unsure of the entirety of patients' marijuana usage. In other words, there is a communication gap between therapists and their patients for reasons yet unknown. PTs and PTAs that participated in this study have shown tendencies mirroring the results of past studies that looked at other areas of healthcare providers. Information to these professionals is being provided heavily through the media, patients, family, and friends. The information that they are receiving may or may not be accurate or valid from a scientific standpoint as they are not being directly derived from peer reviewed scientific studies. The majority of the therapists were aware of the fact that their patients use marijuana along with their therapy regimen but were hazy as to the methods and timing of their patients' usage. Therapists have reported that their patients are not smoking or vaporizing marijuana nearly as much as they are eating, drinking and topically applying the drug to receive benefits. The use of marijuana in the physical therapy clinic has been reported to generally have no effect on therapists' regimen plans nor does it generally have an effect on patient's participation in these protocols. These affects, if any, are also reported to be patient and situational based. This study illuminates the incredible support of PTs and PTAs for further education, research and training about marijuana in the physical therapy

field. Patients should be receiving trustworthy information and treatment from professionals who attain a significant amount of research, training, and confidence.

REFERENCES

1. Abernethy, A. (2019, July 25). Hemp Production and the 2018 Farm Bill. Retrieved from https://www.fda.gov/news-events/congressional-testimony/hemp-production-and-2018-farm-bill-07252019.
2. Abrams, D. I., Jay, C. A., Shade, S. B., Vizoso, H., Reda, H., Press, S., . . . Petersen, K. L. (2007). Marijuana in painful HIV-associated sensory neuropathy: A randomized placebo-controlled trial. *Neurology, 68*(7), 515-521. doi:10.1212/01.wnl.0000253187.66183.9c
3. Aggarwal, S. K., Kyashna-Tocha, M., & Carter, G. T. (2007). Dosing Medical Marijuana: Rational Guidelines on Trial in Washington State. *Medscape General Medicine, 9*(3), 52.
4. Bega, D., Simuni, T., Okun, M. S., Chen, X., & Schmidt, P. (2016). Medicinal Cannabis for Parkinsons Disease: Practices, Beliefs, and Attitudes Among Providers at National Parkinson Foundation Centers of Excellence. *Movement Disorders Clinical Practice, 4*(1), 90-95. doi:10.1002/mdc3.12359
5. Babson, K. A., Sottile, J., & Morabito, D. (2017). Cannabis, Cannabinoids, and Sleep: A Review of the Literature. *Current Psychiatry Reports*, *19*(4). https://doi.org/10.1007/s11920-017-0775-9
6. Bostwick, J. M. (2012). Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana. *SciVee*. doi:10.4016/39225.01

7. Carlini, B. H., Garrett, S. B., & Carter, G. T. (2017). Medicinal Cannabis: A Survey Among Health Care Providers In Washington State. *American Journal of Hospice and Palliative Medicine®, 34*(1), 85-91. doi:10.1177/1049909115604669
8. Chan, M. H., Knoepke, C. E., Cole, M. L., Mckinnon, J., & Matlock, D. D. (2017). Colorado Medical Students' Attitudes and Beliefs About Marijuana. *Journal of General Internal Medicine, 32*(4), 458-463. doi:10.1007/s11606-016-3957-y
9. Chiou, L., Hu, S. S., & Ho, Y. (2013). Targeting the cannabinoid system for pain relief? *Acta Anaesthesiologica Taiwanica, 51*(4), 161-170. doi:10.1016/j.aat.2013.10.004
10. Ciccone, C. D. (2016). Medical Marijuana: Just the Beginning of a Long, Strange Trip? *Physical Therapy, 97*(2), 239-248. doi:10.2522/ptj.20160367
11. Corroon, J., & Phillips, J. A. (2018). A Cross-Sectional Study of Cannabidiol Users. Cannabis and Cannabinoid Research, 3(1), 152–161. doi: 10.1089/can.2018.0006
12. Doblin, R. E., & Kleiman, M. A. (1991). Marijuana as antiemetic medicine: A survey of oncologists experiences and attitudes. *Journal of Clinical Oncology, 9*(7), 1314-1319. doi:10.1200/jco.1991.9.7.1314
13. Kondrad, E., & Reid, A. (2013). Colorado Family Physicians Attitudes Toward Medical Marijuana. *The Journal of the American Board of Family Medicine, 26*(1), 52-60. doi:10.3122/jabfm.2013.01.120089

14. Maccallum, C. A., & Russo, E. B. (2018). Practical considerations in medical cannabis administration and dosing. *European Journal of Internal Medicine, 49*, 12-19. doi:10.1016/j.ejim.2018.01.004

15. Moeller, K. E., & Woods, B. (2015). Pharmacy Students' Knowledge and Attitudes Regarding Medical Marijuana. American Journal of Pharmaceutical Education, 79(6), 85. doi:10.5688/ajpe79685

16. Nurmikko, T. J., Serpell, M. G., Hoggart, B., Toomey, P. J., Morlion, B. J., & Haines, D. (2007). Sativex successfully treats neuropathic pain characterised by allodynia: A randomised, double-blind, placebo-controlled clinical trial. *Pain, 133*(1), 210-220. doi:10.1016/j.pain.2007.08.028

17. Pascual, D., Sánchez-Robles, E., García, M., & Goicoechea, C. (2018). Chronic pain and cannabinoids. Great expectations or a Christmas carol. *Biochemical Pharmacology*. doi:10.1016/j.bcp.2018.07.033

18. Palamar, J. J., Ompad, D. C., & Petkova, E. (2014). Correlates of intentions to use cannabis among US high school seniors in the case of cannabis legalization. *International Journal of Drug Policy*, *25*(3), 424–435. doi: 10.1016/j.drugpo.2014.01.017

19. Piomelli, D., Solomon, R., Abrams, D., Balla, A., Grant, I., Marcotte, T., & Yoder, J. (2019). Regulatory Barriers to Research on Cannabis and Cannabinoids: A Proposed Path Forward. Cannabis and Cannabinoid Research, 4(1), 21–32. doi: 10.1089/can.2019.0010

20. Reinarman, C., Nunberg, H., Lanthier, F., & Heddleston, T. (2011). Who Are Medical Marijuana Patients? Population Characteristics from Nine California Assessment Clinics. Journal of Psychoactive Drugs, 43(2), 128–135. doi: 10.1080/02791072.2011.587700

21. Shah, A., Craner, J., & Cunningham, J. L. (2017). Medical cannabis use among patients with chronic pain in an interdisciplinary pain rehabilitation program: Characterization and treatment outcomes. *Journal of Substance Abuse Treatment, 77*, 95-100. doi:10.1016/j.jsat.2017.03.012

22. Ste-Marie, P. A., Fitzcharles, M., Gamsa, A., Ware, M. A., & Shir, Y. (2012). Association of herbal cannabis use with negative psychosocial parameters in patients with fibromyalgia. *Arthritis Care & Research, 64*(8), 1202-1208. doi:10.1002/acr.21732

23. Ulugol, A. (2014). The Endocannabinoid System as a Potential Therapeutic Target for Pain Modulation. *Balkan Medical Journal, 31*(2), 115-120. doi:10.5152/balkanmedj.2014.13103

24. Voth, E. A. (2001). Guidelines for prescribing medical marijuana. *Western Journal of Medicine,175*(5), 305-306. doi:10.1136/ewjm.175.5.305

25. Walsh, Z., Callaway, R., Belle-Isle, L., Capler, R., Kay, R., Lucas, P., & Holtzman, S. (2013). Cannabis for therapeutic purposes: Patient characteristics, access, and reasons for use. *International Journal of Drug Policy, 24*(6), 511-516. doi:10.1016/j.drugpo.2013.08.010

26. Wallace, M., & Lazzaretto, D. (2007). *Dose-dependent Effects of Smoked Cannabis on Capsaicin- induced Pain and Hyperalgesia in Healthy Volunteers*. *107*(5), 12.

27. Ware, M. A., Wang, T., Shapiro, S., Robinson, A., Ducruet, T., Huynh, T., . . . Collet, J. (2010). Smoked cannabis for chronic neuropathic pain: A randomized controlled trial. *Canadian Medical Association Journal, 182*(14). doi:10.1503/cmaj.091414

28. Zolotov, Y., Vulfsons, S., Zarhin, D., & Sznitman, S. (2018). Medical cannabis: An oxymoron? Physicians' perceptions of medical cannabis. International Journal of Drug Policy, 57, 4-10. doi:10.1016/j.drugpo.2018.03.

APPENDIX

Section A: Consent to Act as a Research Participant

Physical Therapist Attitudes and Patient Use of Marijuana as an Adjunct to Physical Therapy

Survey from Humboldt State University and Humboldt Institute for Interdisciplinary Marijuana Research

Dear Colleague,

Your answers to these questions are completely anonymous.

To help maintain your privacy remember to not put any personally identifying information (such as your name or address) on this survey.

You qualify for this study if you are a licensed physical therapist (PT) or physical therapist assistant (PTA) and can help us a great deal by answering these questions. With this information we can better understand Physical Therapists attitudes toward marijuana and help others. Please only take the survey once.

Thank you for participating!

PURPOSE: The primary aim of this study is to understand how physical therapists view patients' use of marijuana. In order to gain a more complete picture of the intersection between physical therapy and marijuana, we aim to survey current adult physical therapy patients who are also prescribed marijuana. The patient perspective and use behaviors are important for physical therapists to understand to ensure safety and enhance patient education in the context of physical therapy intervention.

I understand that my participation in any study is entirely voluntary, that I must be at least 18 years or older to participate, and that I may decline to enter each study or withdraw from any of the studies at any time without jeopardy. I also understand that the investigator may terminate my participation in the study at any time.

I consent to the following procedures:

- Filling out the attached survey on Cannabis

Total Length of Study: 20 minutes
Location of Study: Online
Primary Investigator: Dr. Whitney Ogle DPT

I understand that the researchers will keep my participation confidential and completely anonymous by not collecting any individually identifiable information. I understand that by participating in research, I will receive the benefit of contributing to a greater understanding of professionals' attitudes and understanding of Marijuana. This will help in the development of meaningful continuing education of marijuana and endocannabinoids for physical therapists.

If you have any concerns with this study or questions about your rights as a participant, contact the Institutional Review Board for the Protection of Human Subjects at irb@humboldt.edu or (707) 826-5165.

If I have questions, I may also contact Dr. Whitney Ogle at wlo8@humboldt.edu

I have read, received a copy of, and understand this form: Yes _____; No_____

(Note: on Survey Monkey, if the respondent answers "No" they will not be able to continue with the survey and will be sent to the last page saying "Thank you for your time")

Section B: Experience with Marijuana

Section C: Working with Patients who Use Marijuana

Section D: Views on Marijuana Policies

Section E: Demographics

Section B: Experience with Marijuana

From which sources have you obtained most of your information about marijuana? (Check all that apply)

- ○ News media
- ○ Patients
- ○ Other providers
- ○ Peer-reviewed journal articles
- ○ Lectures
- ○ Friends/family

- ○ Dispensary owners/staff
- ○ Continuing Education
- ○ Personal experience (medical or recreational)
- ○ Personal opinion
- ○ I know very little about medical marijuana
- ○ Unsure
- ○ Other: _____

Have you ever worked with patients who use marijuana?

- ○ No
  - o If no, skip to Section B
- ○ Yes
  - o If yes, continue to next question

Section C: Working With Patients Who Use Marijuana

How would you describe patient use of marijuana?

- Medical marijuana use
- Recreational use
- Both

How often have you worked with patients who use marijuana?

- ○ Frequently
- ○ Fairly regularly
- ○ Rarely

What is the most common medical diagnosis for the patients you work with who use marijuana?

(Fill in the blank)

What is the most common PT treatment diagnosis for the patients you work with who use marijuana?

(Fill in the blank)

How would you describe the timing of-marijuana use in your patients relative to therapy?

- ○ Patients use hours before appointment
- ○ Patients use shortly before appointment
- ○ Patients use topical forms of marijuana/CBD during appointment
- ○ Patients use after appointment
- ○ Patients use long after appointment to assist in sleep

- ○ Patients use on days when they do not attend therapy
- ○ Unknown
- ○ Other (fill in the blank)

How are your patients consuming marijuana? (Check all that apply)

- ○ Smoke leaf
- ○ Vaporize leaf
- ○ Smoke concentrates
- ○ Vaporize concentrates
- ○ Eat
- ○ Apply oils/gels to skin
- ○ Liquid tinctures
- ○ Unsure
- ○ Other: _____

What type of marijuana products are your patients using? (Check all that apply)

- ○ Non-psychoactive CBD
- ○ Sativa-dominant
- ○ Indica-dominant
- ○ Hybrid (Sativa-Indica)
- ○ Unsure
- ○ Other: _____

How would you describe the effects of marijuana on your patient participation during therapeutic interventions?

- ○ Significant improvements in participation
- ○ Moderate improvements in participation
- ○ No obvious changes in participation
- ○ Moderate declines in participation
- ○ Significant declines in participation
- ○ It depends on the patient

If a patient obviously uses marijuana prior to PT, does this change your treatment plan for the day? (Check all that apply)

- ○ No
- ○ Yes – more likely to do manual therapy
- ○ Yes – more likely to do therapeutic exercise
- ○ Yes – more likely to do modalities
- ○ Yes – more likely to do neuromotor re-education
- ○ Yes – more likely to do patient education about the risks of marijuana use
- ○ It depends on the patient
- ○ Other: _____
- ○ Skip

****

Section D: Views on Marijuana Policies

(5 point Likert Scale from Strongly Agree to Strongly Disagree)

I am comfortable discussing marijuana with patients.

I am comfortable with my understanding of the endocannabinoid system.

I am comfortable with my understanding of non-psychoactive cannabidiol (CBD).

I am comfortable with my understanding of the use of medical marijuana.

Physical therapists and Physical therapist assistants should play a role in patient education regarding risks and benefits of marijuana.

Training about marijuana should be incorporated into PT and PTA school curricula.

Training (CME) about marijuana should be available and specific for PT's and PTA's.

I would attend a continuing education course regarding marijuana.

Marijuana helps patients who suffer from chronic, debilitating medical conditions.

There are significant physical health benefits to using marijuana.

There are significant mental health benefits to using marijuana.

Using marijuana poses serious physical health risks.

Using marijuana poses serious mental health risks.

There is not enough scientific evidence regarding marijuana to make any professional claims about its use.

There should be more research looking at the role of marijuana on physical therapy patient populations.

The benefits of marijuana outweigh the risks.

Section E: Demographics

What is your age? _____

What is your gender or gender identity?

- ○ Female
- ○ Male
- ○ Non-binary

Are you licensed PT or PTA?

- ○ Physical Therapist (PT)
- ○ Physical Therapist Assistant (PTA)

How many years have you been licensed as a PT or PTA? (Fill in the blank)

In which US state do you practice? (Fill in the blank)

What is the legal status of marijuana in your state?

- Medicinal and Recreational
- Medicinal only
- Unsure
- Other (please specify): _____

How would you describe the location of your practice?

- ○ Rural
- ○ Urban
- ○ Suburban

Where do you practice?

- ○ Academic institution
- ○ Acute care hospital
- ○ Health & Wellness facility
- ○ Hospital based outpatient
- ○ Industry
- ○ Inpatient
- ○ Home health
- ○ Outpatient facility
- ○ Research center
- ○ School system
- ○ Skilled nursing facility
- ○ Other (please specify): _____
- ○ Prefer not to answer

How would you describe your clinical focus?

- ○ Acute care

- ○ Aquatic
- ○ Cardiovascular
- ○ Geriatric
- ○ Hand rehabilitation
- ○ Lymphedema management
- ○ Neurology
- ○ Oncology
- ○ Orthopedics
- ○ Pediatrics
- ○ Research
- ○ Sports
- ○ Women's Health
- ○ Wound Management
- ○ Other (please specify): _____
- ○ Prefer not to answer